ASUS P750 Repair Guide

(Level 3 4) Ver 1.0b

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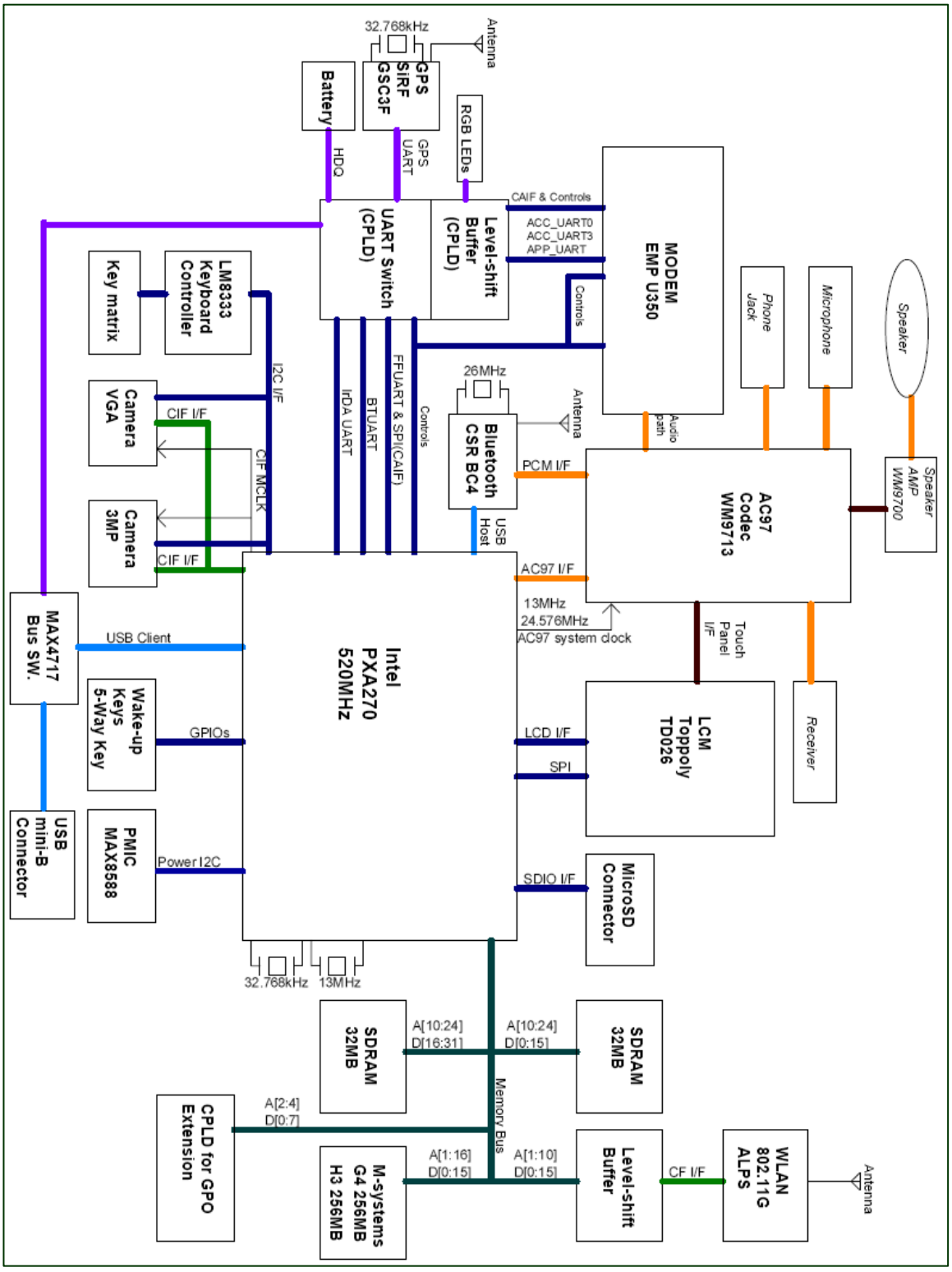
1. Product General Specification

Networking system	HSDPA 3.6Mbps, UMTS 2100, EDGE/GSM 900/1800/1900; GPRS Class B
Operating System	Microsoft Windows Mobile 6 Professional
CPU	Marvell PXA270M 520MHz
Dimensions	113 x 58 x 17.4 mm, 130g
Battery	1300 mAh Lithium-Ion
Talk time	300 mins for 3G, 360 mins for 2G
Standby time	240 hours for 3G, 220 hours for 2G
Form Factor	Bar type with numeric keypad
Color	Black
Display	2.6“ Touch Screen / 65K TFT LCD / 240 x 320
Connectivity	WLAN 802.11 b+g / Bluetooth 2.0+EDR / USB v1.1
Browsing	HTML 4.01, WAP 2.0 (IE)
Messaging	SMS/MMS/Email/MSN/Push E-mail
Memory	256 MB Flash + 64 MB SDRAM
Expansion Slot	Micro-SD (SDHC supports)
GPS	GPS (SiRF III with internal antenna), AGPS (need to co-work with local operators) , TMC (optional cable)
JAVA	J2ME (CLDC 1.1 + MIDP2.0)
Camera	3 Mega-Pixel (Auto focus)
Audio	MP3, WMA, AAC, AAC+, 3GP

Video	MPEG4 / H.263 Playback and Recording
Ringtone	128-ch Polyphonic ringer & MP3
PIM/Utilities	Notes, Calendar, Alarm, and Windows Live Messenger, Word (editor), Excel (editor), and Power Point (viewer)
Advanced	Ur Time, Backup, ASUS Launcher, Voice Commander, Bluetooth Remote Presenter, Travelog, Location courier, Business Card Recognition, Newstation, Meeting planner, Auto cleaner, GPS catcher, OMA DRM V2.0

2. Block Diagram



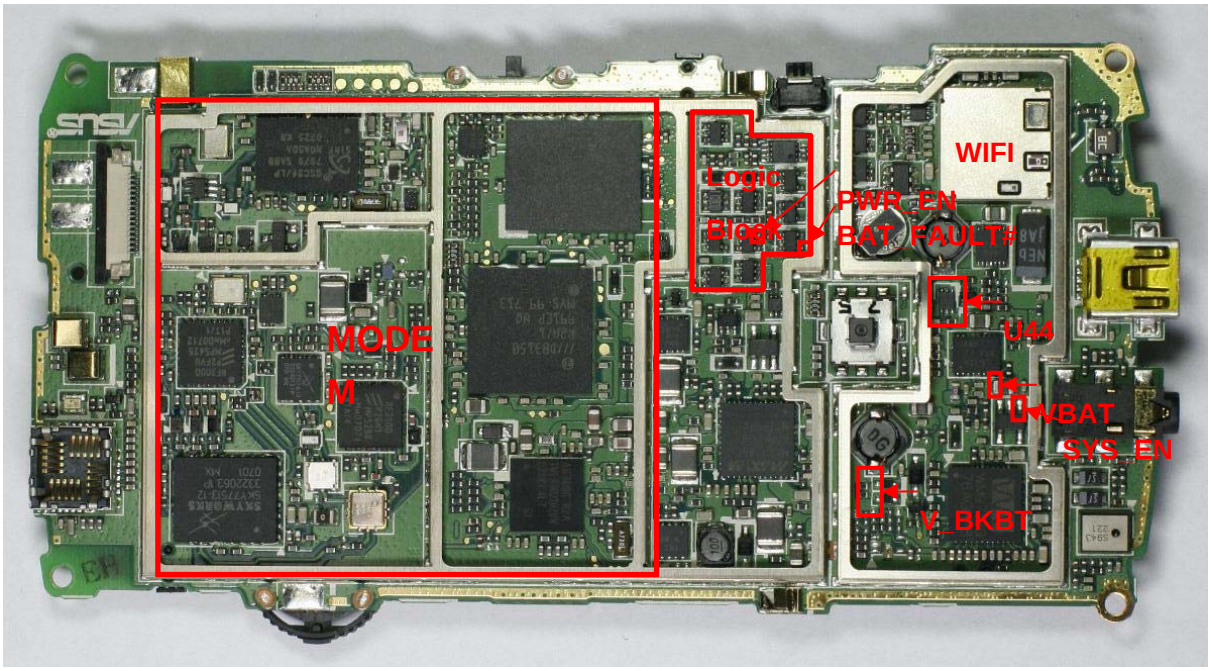
3. Appearance

3.1 Front View

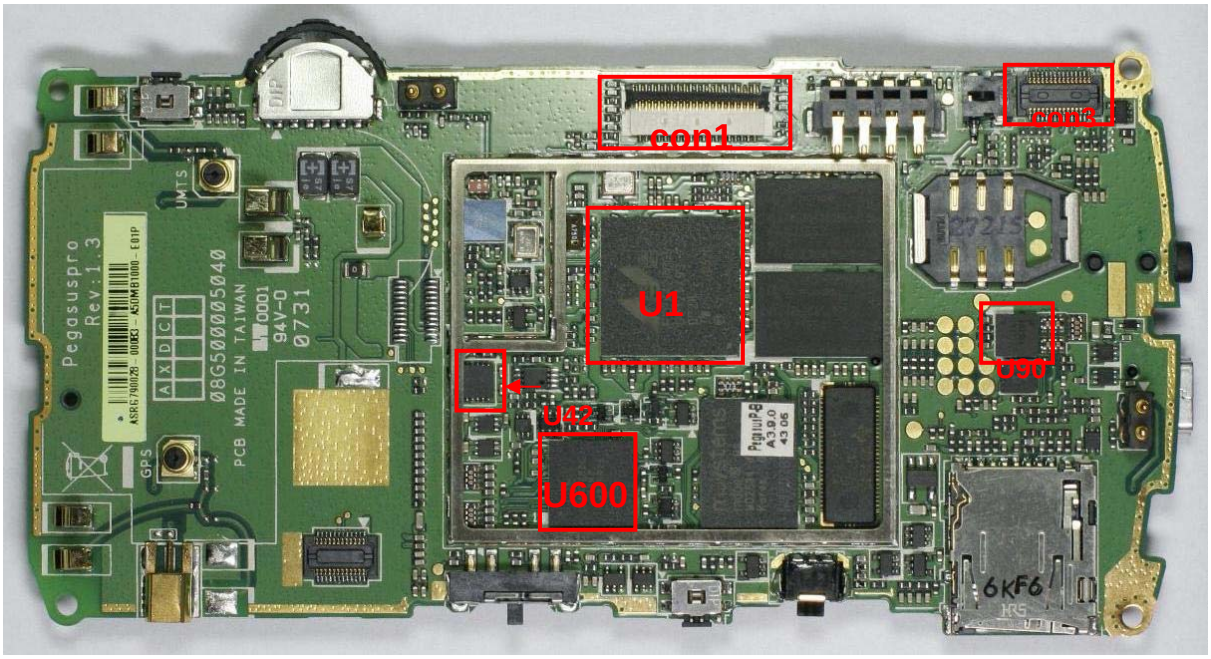
3.2 Side View

4. PCB Placement

4.1 Main Board Top View



4.2 Main Board Bottom View

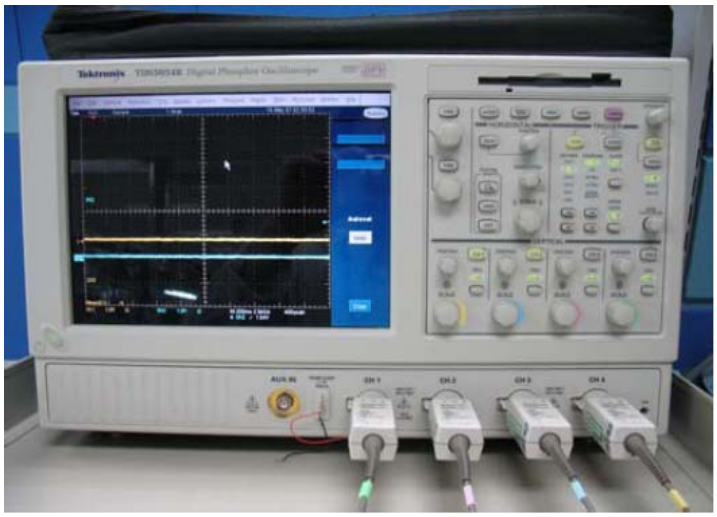


5. Equipment List

5.1 Hardware

Power source: power supply (Monitor current)

Digital Phosphor Oscilloscope



Digital Meter

Mechanical Auxiliary Tool & tooling

- Screwdriver (T5 ＊ Cross ＋)
- Tweezers
- Plastic Wrench

Micro SD

6. Trouble shooting Case

6.1 System can’t Boot!

The main of the reason is related for component short and incorrect in “Power-On Sequence” issues. First, we can check the Current of the device during the OS booting process then try to measure the “Power ON Sequence”. In P750 design concept; The System will auto Power On in two conditions One is first connect to device, another the voltage drop below 2.8V from backup battery. If the voltage more than 2.8V, the system should not booting automatically. It is recommendation for hold on the reset button until the power supply working when we want to make sure the OS booting process is activated.

6.1.1 Power on sequence

Please check “Power on Sequence“ for each Voltage:

A. V_BAT = power supply voltage

   The proposal of V_BAT is for System power.

   The check point is C228.1

B. V_BKBT = 3.3V

   If V_BKBT < 3.3V，Must inspect the soldering status to eliminate the component U44 defective (floating and diode reverse issue) .

   It will cause the charged failure for the backup battery and OS booting abnormal.

C. VCC_3.0V, VCC_1.8V, VCC_CORE > 1.3V, VCC_PLL = 1.3V, VCC_SRAM = 1.1V

   If found the incorrect of the voltage then we can try to check the soldering floating or mistake component (U41, L8, L9, L10).

D. SYS_EN = 2.9V

E. PWR_EN = 2.9V

The Item C is noraml but the SYS_EN / PWR_EN< 2.9V.It always the solder issue for CPU(U1). Try to rework the U1 and replace it.

F. BAT_FAULT# = 3.3V

Please check the floating and diode reverse issue on the component (C337, U33, U50) .

6.1.2 CPU BGA

If the device still didn't work after item 1 trace, we can measure the signal T12 (NAND_CS#) should be get the high-low transition by oscillate scope. Check the data response from TP28 (SD15). If the answer is well it maybe the CPU BGA issue or Chip defective. We can change the CPU to improve the situation. According the manufacture experience for the CPU which replace in time will be failure for the work.

6.1.3 NAND Flash

In Item 2, if the data can't response from TP28 (SD15), in my opinion is try to re-flash the data to NAND flash via JTAG.

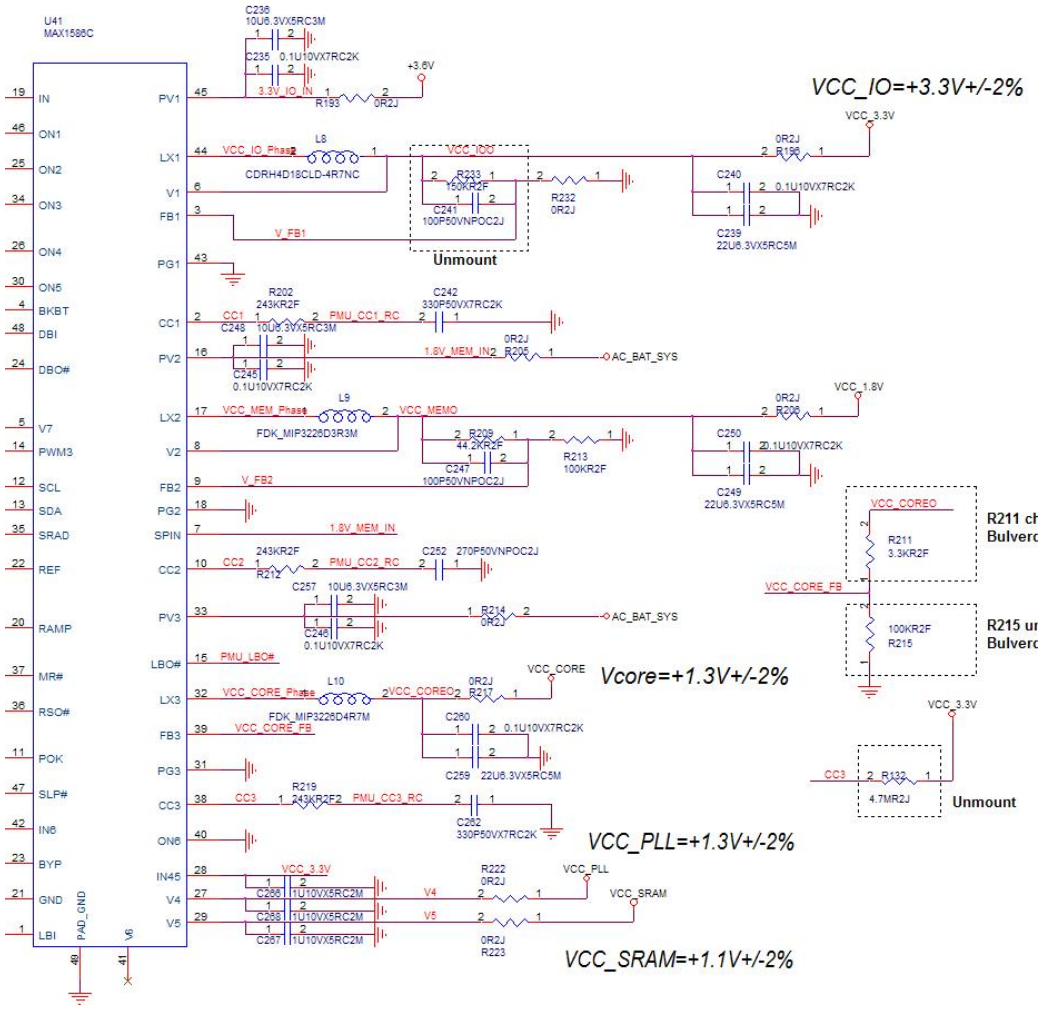


Figure 1. PMU

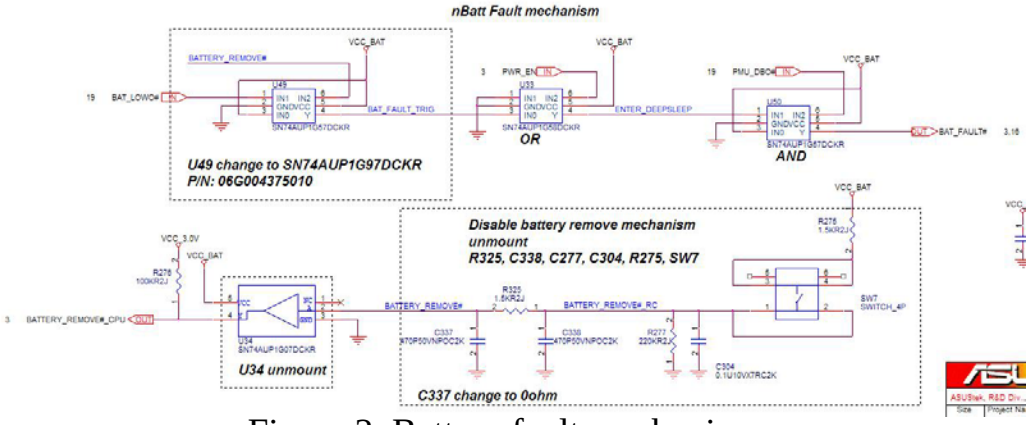


Figure 2. Battery fault mechanism

6.2 MMI Test Item

6.2.1 Display Test

The item is focus verify the function ”LCM interface” and ”backlight”, please check the below item if the result is “No Go”.

A. LCD_PWR_EN 1.8V
B. LCD_3.0V 2.9V
C. LCD_RESET# 2.9V
D. LCD_FCLK, LCD_LCLK, LCD_PCLK should exist the clock signal for LCD panel. If we can not measure the signal should be check the soldering /floating each side on resistor (R19, R20, R21).
E. LCD_DATA_EN 2.9V，

The white screen will happen from above items. If “LCD_PWR_EN/LCD_RESET#” abnormal mean CPLD NG. The color deviation or abnormal expose should be check the LCD0 ~ LCD15 with the CON1. If we can’t get improve the signal status after change or re-work the CON1, the main of the reason should be CPU NG.

F. V_LED 12V

If the backlight can not active on the LCD panel, we should measure the 12V on the “V_LED”. If not then check the relate components of the U48.

6.2.2 Vibrator Test

It is less probity low for the item" board-level fail". We can check the below status for charge the U86 SMT or component defective issue.

U86.4 2.9V

U86.1 3.3V

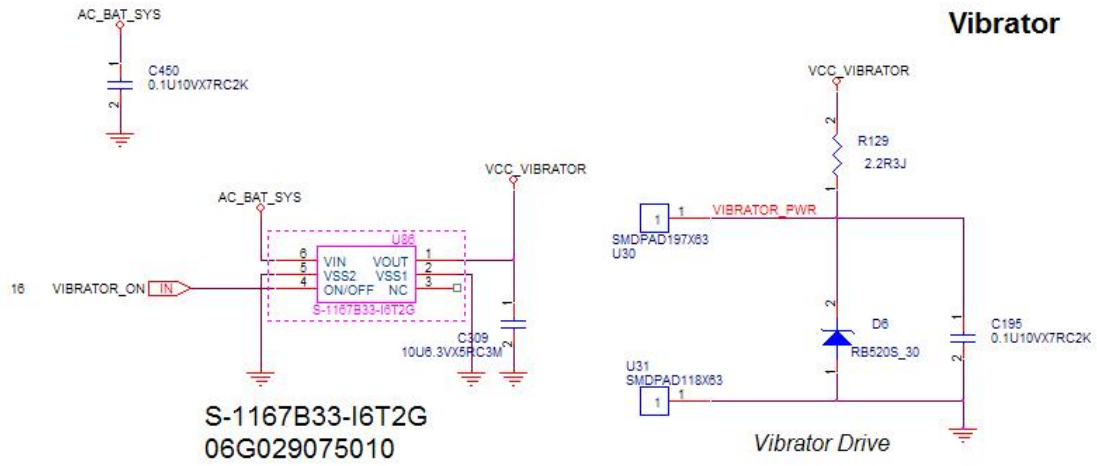


Figure 3. Vibrator mechanism

6.2.3 RTC Test

We can measure the 32.768 for X2 clock signal. We can try to replace the CPU and X2 on this item failure.

6.2.4 Storage Test

It should be U6 (Flash memory) on soldering issue or component defective.

6.2.5 Micro SD Test

We can check the below signal list to verify the Micro SD function.

A. MMC_PWR_EN 2.9V ->If not U600 NG.
B. MMC_3.0V 2.9V->If not check U87 soldering issue.

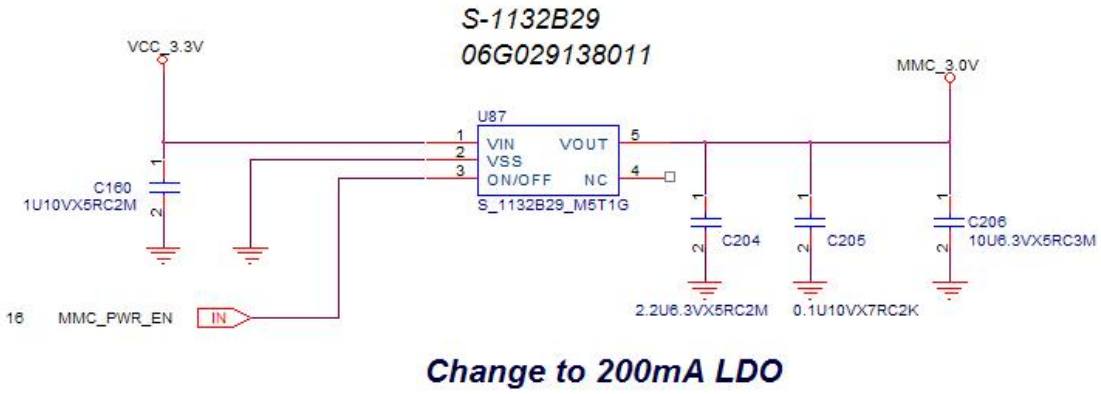


Figure 4. micro SD Power

Ps. The position of the Micro SD Socket had the mechanical position declination. So the SD card still exist detect but it will cause lodged for SD insert at assembly test. ◦

6.2.6 LED Test

The test item is for Red, blue, green Led die and key pad LED could works. The scenario will step by step to follow the circle ”Red->Green->Blue” on indicated LED. After the LED twinkled at 1 Hz then keypad white LED also twinkle the key panel.

A. RGB LED Abnormal

The RGB LED signal is controlled by CPLD. The behavior code is no exist in CPLD which will cause the RGB LED always illuminated red light. Please replace the CPLD on PCB.

If one of the colors can’t works on RGB LED, please check the soldering issue on R621, R622, R623 or replace the LED600.

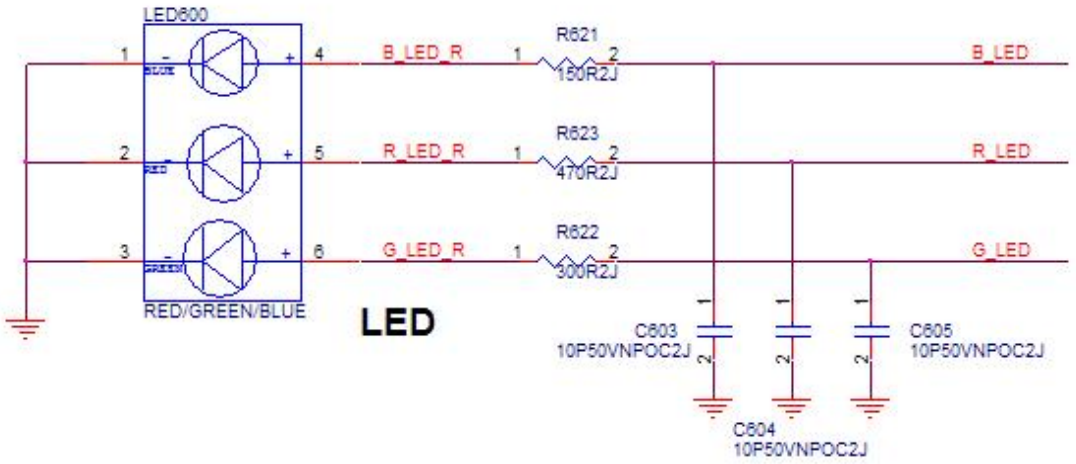


Figure 5. Indication LED Circuit

B. Keypad LED failure

Please measure the U88.4 (KEY_LED_EN) ->2.9V,if the result is true please check the U88.

Keypad LED Power

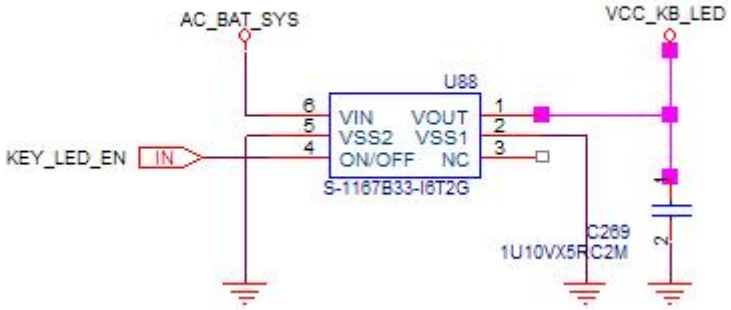


Figure 6. Keypad LED power

6.2.7 Camera Test & VGA Camera

The main of the reason is for assembly issue and component defective. The camera's function can't work on component defective issue. For example: dirty lens, can't auto focus.

Caution: The VGA socket didn't support one direction assembly. If VGA camera direction incorrect, it will cause the booting failure.

If the above the item already finish, try to refer to below issue.

CMOS_3.0V	2.8V
VAAM	2.8V (For Auto focus Motor power Source)

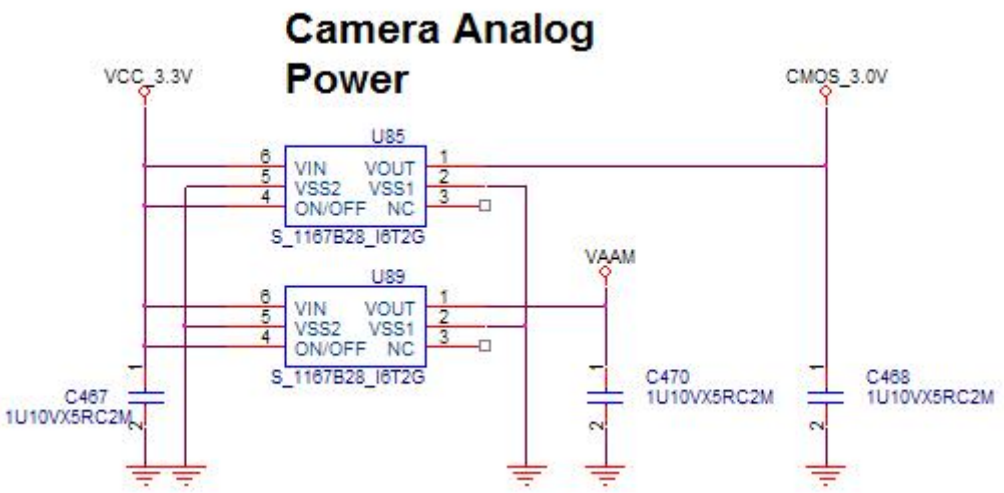


Figure 7. Camera power

The 3M camera and VGA signal:
VC_I2C_SCL, VC_I2C_SDA, CIF_DD0 ~ CIF_DD7.
The CPLD control signal

a. 3M: SENSOR_2M_PD = 0V, SENSOR_2M_RST# = 2.9V, SENSOR_2M_CLKEN = 2.9V
b. VGA: SENSOR_VGA_PD = 0V, SENSOR_VGA_RST# = 2.9V, SENSOR_VGA_CLKEN = 2.9V

If the signal is abnormal please try to change U600 (CPLD).

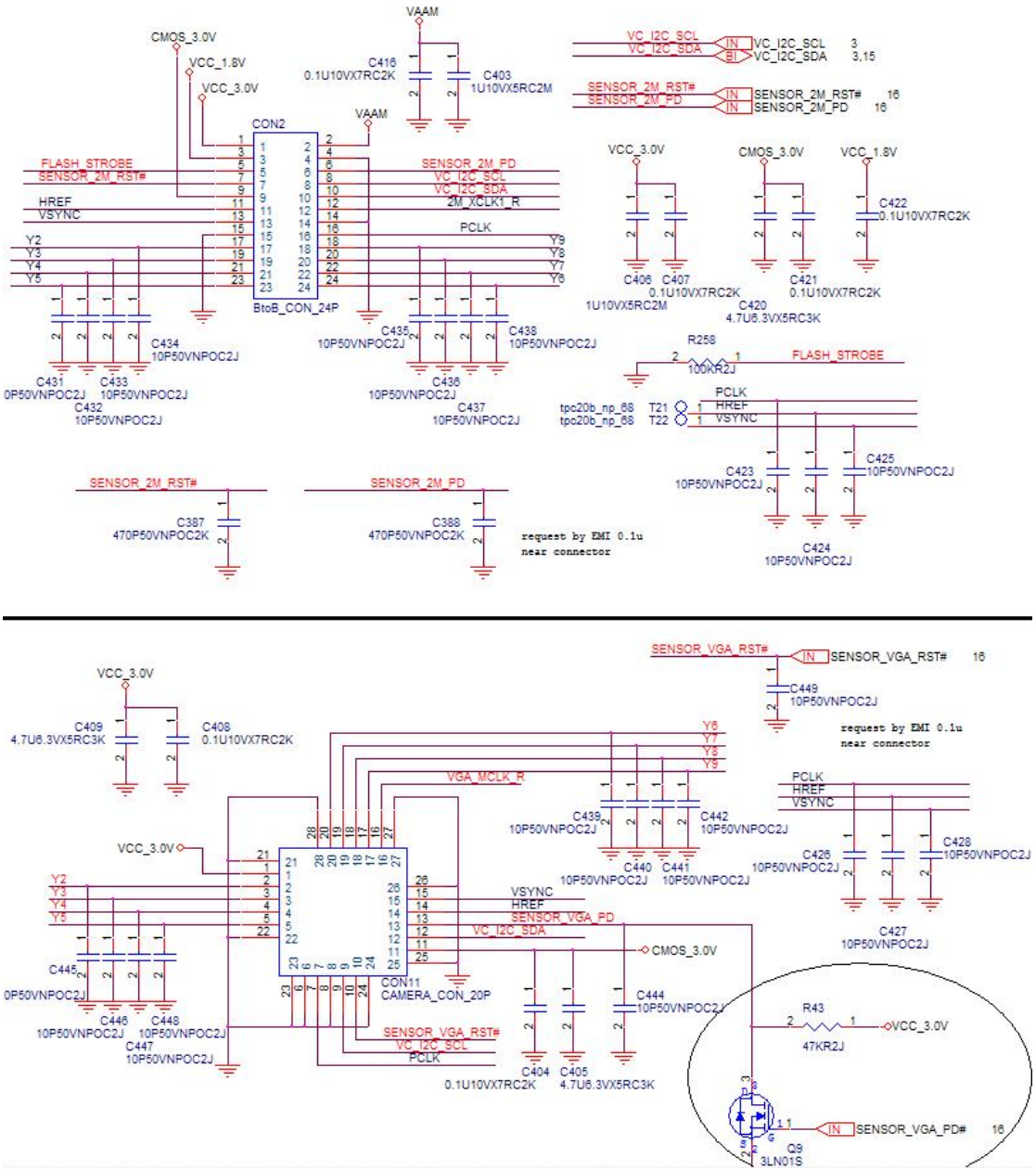


Figure 8. Camera control signal

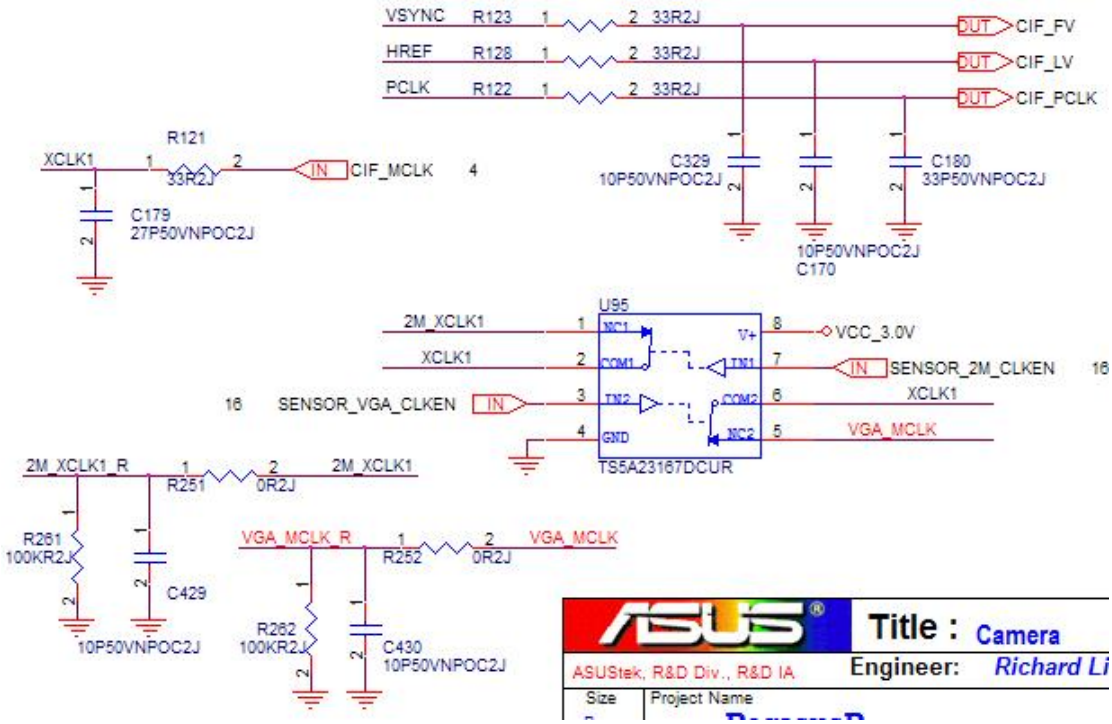


Figure 9. Camera clock source

6.2.8 Check SIM

The main of the function is verify SIM card, If fail please check the below the items.

Check the SIM connector Pin soldering status.

I. SIM_VCC_R 1.8/3.3V (general is 3.3V)
II. SIM_RST 0V (Read mode)，
III. SIM_CLK_R clock (Read mode)
IV. SIM_DAT_R high-low transition (Read mode)

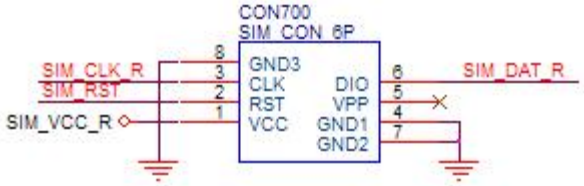


Figure 10. SIM card connector circuit

6.2.9 Battery Test

The main of the function verify electricity charging ability and battery ID information. If the result is failure please check below items to repair.

A. Can’t charging

I. Check the U12.4 (CHARGER_LDO_2.8V) 2.9V
II. Check the R181.2 (CHGR_VUSB) 5V
III. Check the PSEL 2.9V，If not U600 (CPLD) NG.

If all of results are true then U38 (Charger IC) is NG.

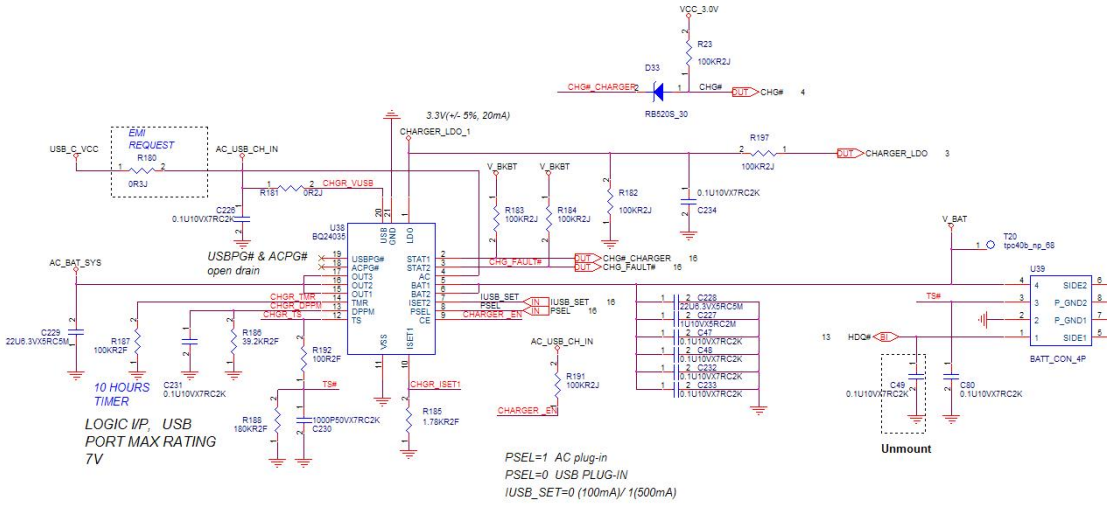


Figure 11. Charger IC circuit

B. Can’t read the battery ID

Check the HDQ_TXD#_PLD and HDQ_RXD_PLD signal. The signal will be detect for a period on the correct status. If the can’t detect then should re-place the U600 (CPLD) NG.

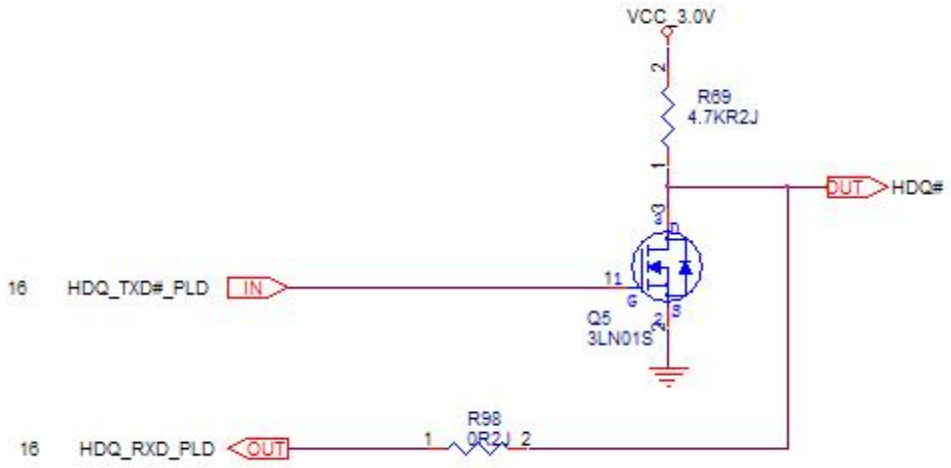


Figure 12. Battery information circuit

6.2.10 SDRAM Test

If we can execute the MMI tool，SDRAM should be normal. If the result is fail, please also check the U7/U8 relative the signal.

C. nSDCS0
D. nSDCAS, nSDRAS
E. SDCKE1
F. SA12, SD15

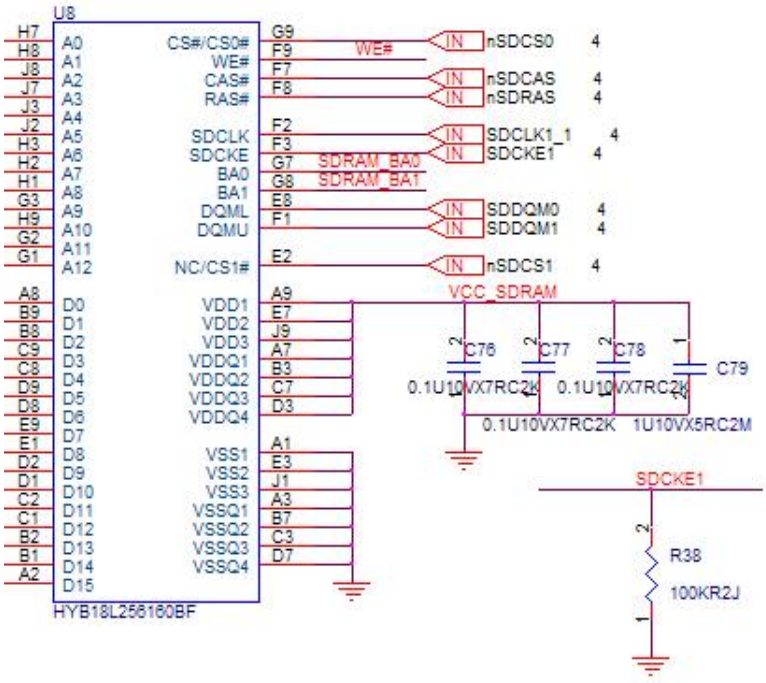


Figure 13. SDRAM circuit

6.2.11 Acoustic Test

It will complicate for this item. We will step by step in below item

6.2.11.i Headset

Inspect the soldering issue on headphone connector. Please follow below item to do trouble shooting.

A. If the system can't detect the "headset plug in", please check the below item. HP_DET 2.9V

If still can not found the defective, please check the component (R56, R59, R62, C115, C118).

B. Left audio path error

Please check the signal on CE1.If the result is normal please replace the U9.

C. Right audio path error

D. Please check the signal on CE2.If the result is normal please replace the U9.

E. Can't Record

First check the voice signal on MIC_HEADSET_R. If didn't work please check the component (R55, R57, C120, C112, C123).

F. Can't Exit the headset mode

Please check HP_DET ->0V，If the answer is not please refer to item A.

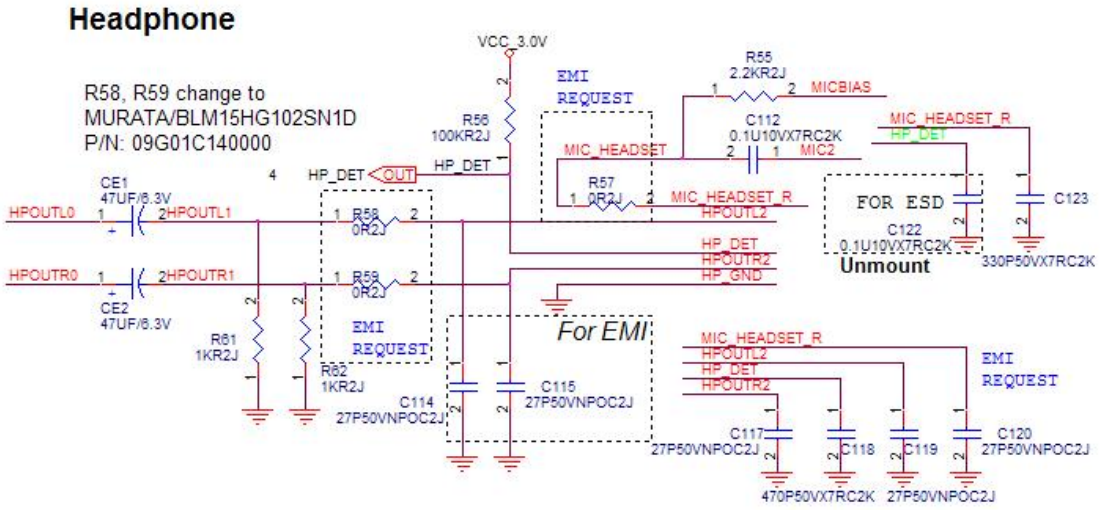


Figure 14. Headset mechanism

6.2.11.ii Speaker

It is not concentrate to Speaker error, we can refer to below items to do trouble shooting.

A. Speaker no Sound

Check the audio signal on both sides from (R65, R66). If we can't found it also keep forward trace on the circuit. If we can get the signal from (SPKL, SPKR) but (R65, R66) still no exist. The U42 (Class-D Amp) NG, replace the Chip U42.

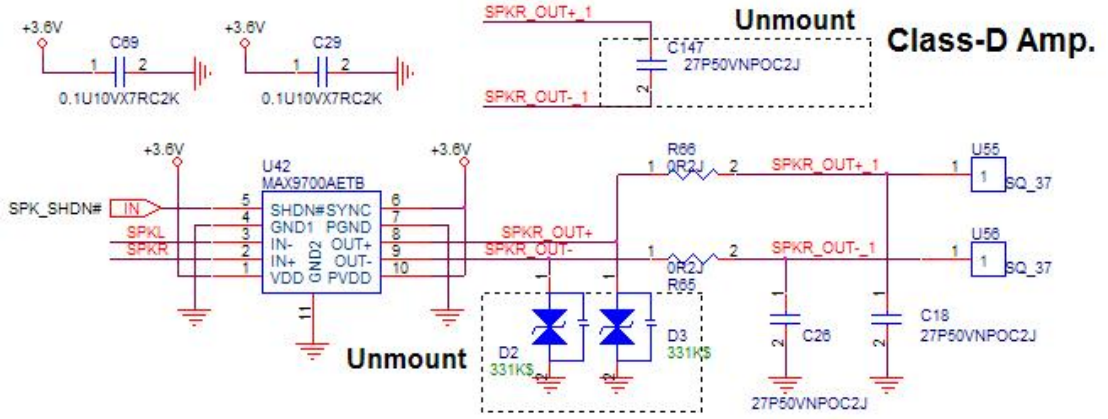


Figure 15. Class D Amp for speaker

B. On-Board Microphone can't Record

If the quality is poor please change the U11. If the function total un-work please check the (L1, C121, C124, C125, 126).

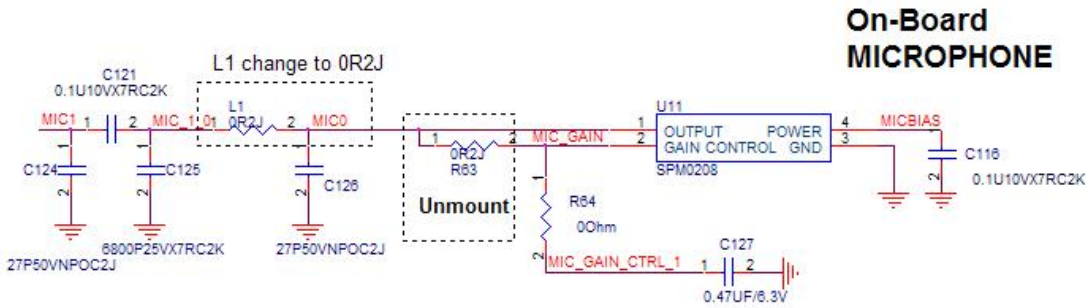


Figure 16. Microphone circuit

6.2.11.iii Receiver

If the receiver no sound, please check the component (R67, R79, C128, C129, D4, D5).

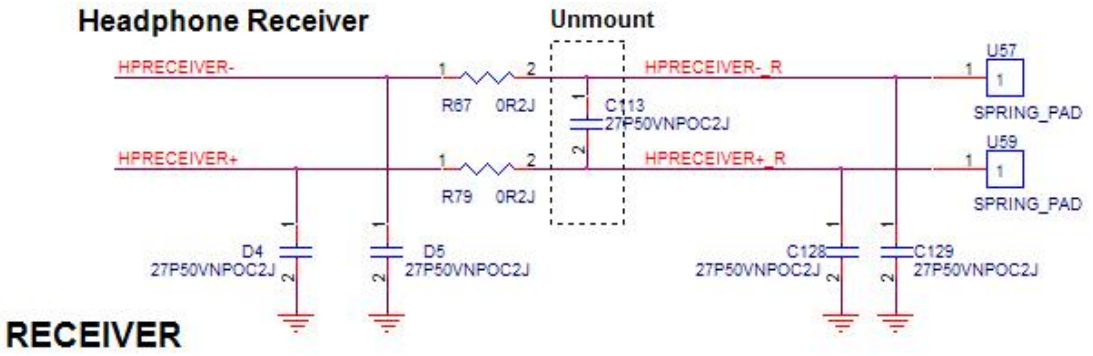


Figure 17. Receiver circuit

6.2.12 Turn On/Off Radio

On Pegasus p, the switch on/off is control by CPU via UART/SPI inter phase. The power of the modem will not shut down by CPU. Please refer to below issue step by step to do trouble shooting!

Modem Power

G. CCPU_VCC-> 3.6V. if not please check the U75 (Step-Down Converter).

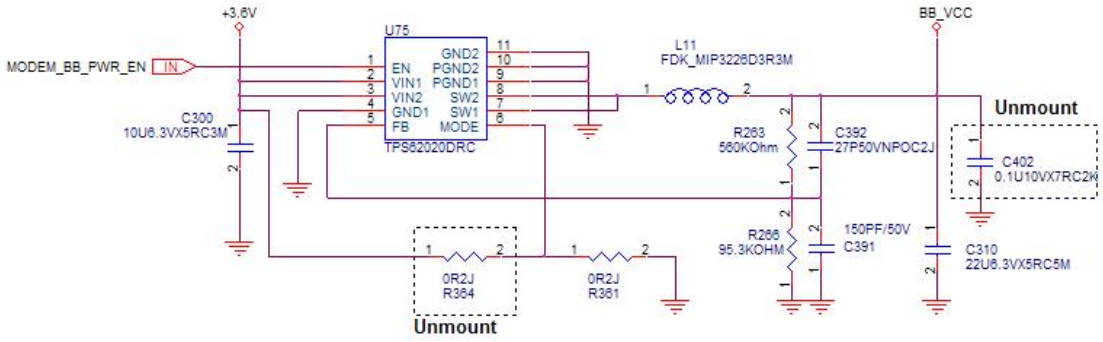


Figure 18. Step-down converter for modem power

H. Check below item

VDD_1V5	1.5V
VDD_1V8	1.8V
VDD_2V75	2.75V
VDD_2V85	2.85V

If the signal is incorrect please replace the U700.

a. Please check the RTC_CLK-> 32.768 KHz clock. If no please replace the X700.

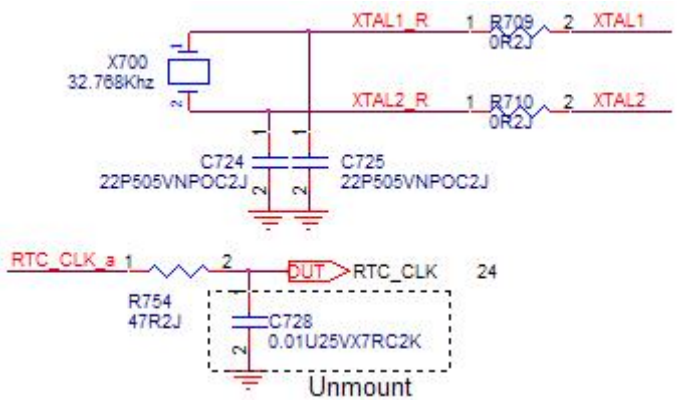


Figure 19. Modem RTC

I. Modem to System Interface

The main of the purpose is level shift on CPLD between Modem and System. We can check the component (R711 ~ R715, R763 ~ R766), If the result is normal then try to change the U600 (CPLD).

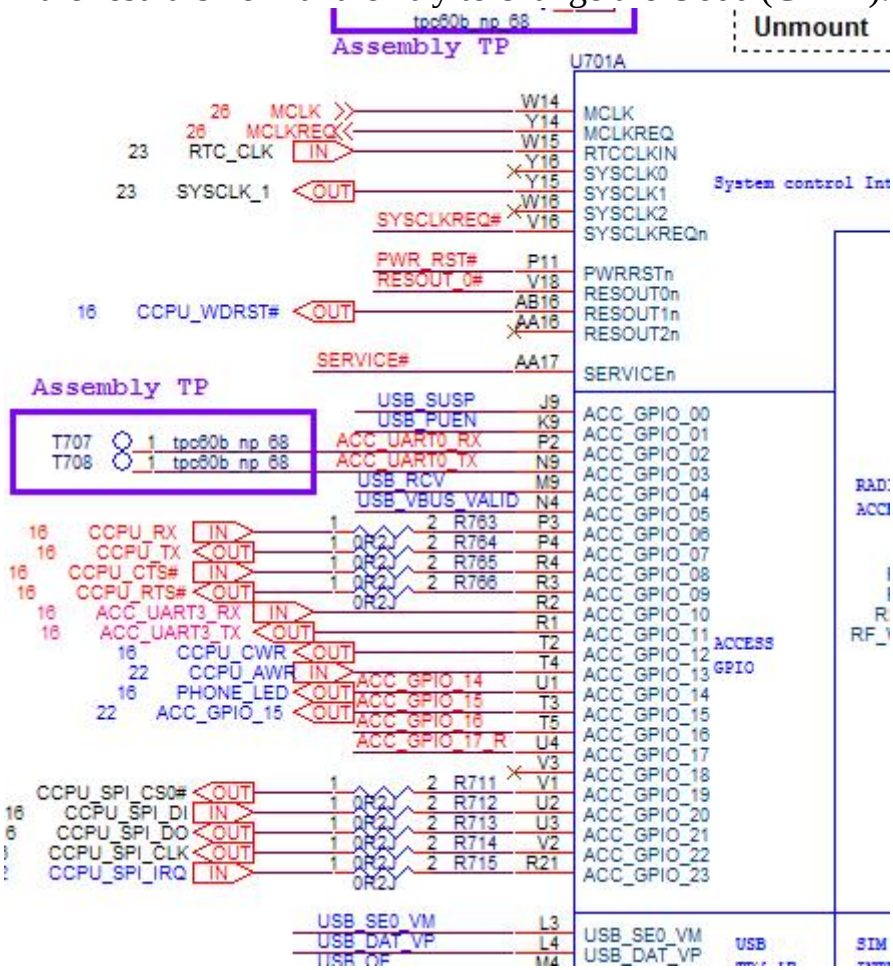


Figure 20. Modem/CPU interface

6.2.13 Version Check

The purpose of the test checks the protocol. If this item failure, pleas refer to the item12 to do trouble shooting.

6.2.14 Keypad Test

Keypad test can separate for board-level test and assembly test. The board-level just for SMT. It just make sure the logic path on keypad matrix. Each path of row/column from keypad driver IC to CPU is well. So we use the specify button to cover all of key test on the keyboard .During the assembly station, all of the button must be pressed by OP according the physical issue.

A. Board level test

The specify key include(joy dial up, joy dial down, joy dial action, 4, 8, clear, #) The P750's keypad matrix contain for (row * 6, column*5). At least we need 6 buttons to fully cover each trace, it is weak for joy dial on 3 XYZ direction test.

We also can know the signal is form which (rows and columns)! For example the key "Clear" is contains for (row 4 + column 1). If the function of the key "Clean" is failure, then we can trace the component (RN16 and RN18). If the result is well then we can change the U90. SMT or component defective issue.

If every key are useless then should be U90. We can check the voltage on the R168.The signal on the resistor is "interrupt#". In general, the voltage should be 2.6V. Next step is measure the R169. The signal on R169 is

watchdog reset# for Keypad IC for itself. If the “interrupt#” and “watchdog reset#” are0~2.6V, it always cause abnormal on U90. We can try to re-heat the chip U90 or replace it.

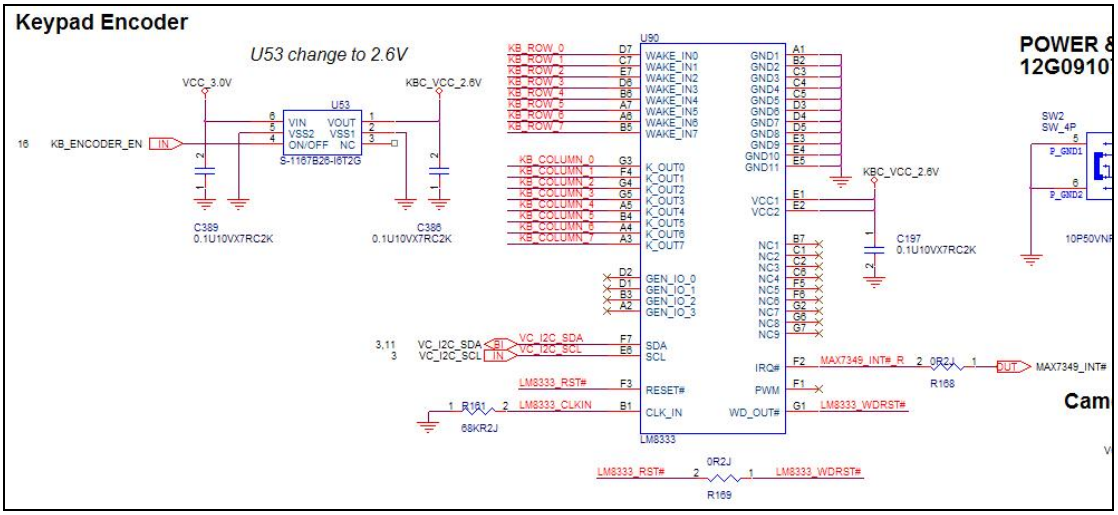


Figure 21. Keypad driver circuit

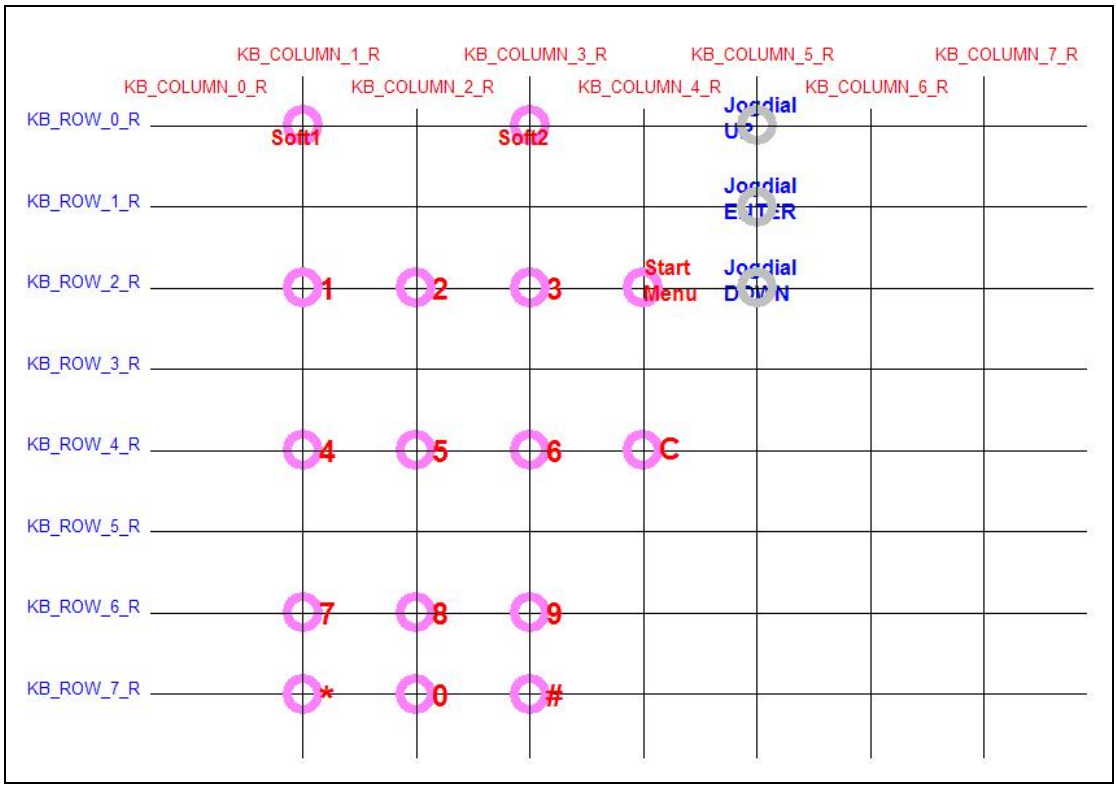


Figure 22. Keypad matrix

J. Assembly test

During assembly keypad test fail. We can easy handle the problem on FPC connector. (FPC connector or Main board connector, Metal dome position deviation).

6.2.15 WiFi Board-Level Test

If the test item fail, we can check the voltage of the (+3.3V_WLAN, +1.5V_WLAN). The result is pass please try to change U13.

6.2.16 GPS Firmware Update

It we can't update the GPS firmware, please check below issue:

A. GPS_PWR_EN 2.9V

B. +2.85V_GPS_BB 2.85V

C. GPS_TX, GPS_RX Signal

The power of the chip is well. We still can't get the signal from GPS_TX, GPS_RX. Please check the R1011 -> 47K ohm? If the answer is true then try to change the U600.

6.2.17 PS Board-Level Test

Follow the test item 16.

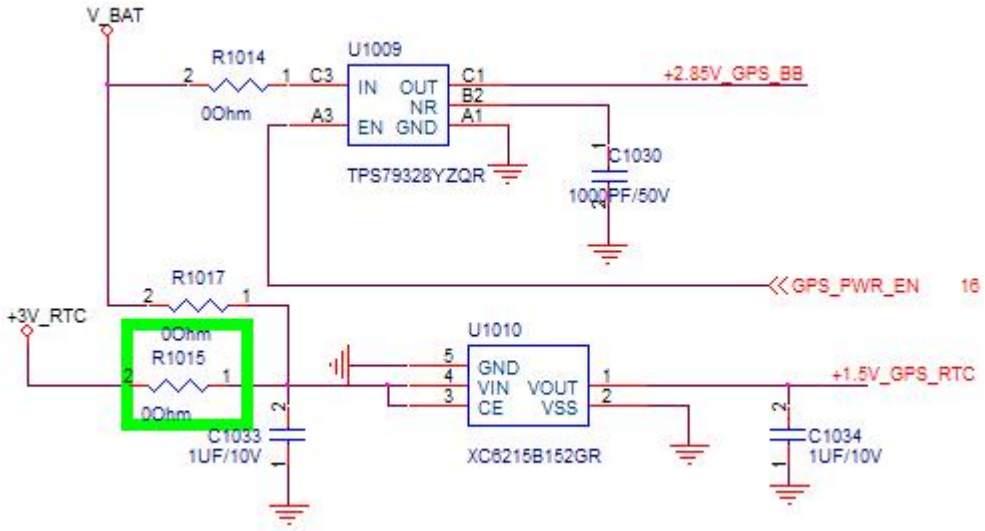


Figure 23. GPS power

6.2.18 TMC Test

TMC pathway: USB connector->U60->U600->CPU. It is the same pathway which cpu read battery information. We can use the Battery ID test result to help us verify the hardware circuit. If the battery ID is pass but this item is failure then please re-work the U60.

6.2.19 BT Board-Level Test

In this item just check the CPU's command sending to blue tooth chip (U20). If the result is NG please check the below item.

BT_VCC_3.3V

R104, R111	USB signal
R102, R104, R110, R111, R112	USB protocol check

If all of item is pass , please re-work the chip U20.

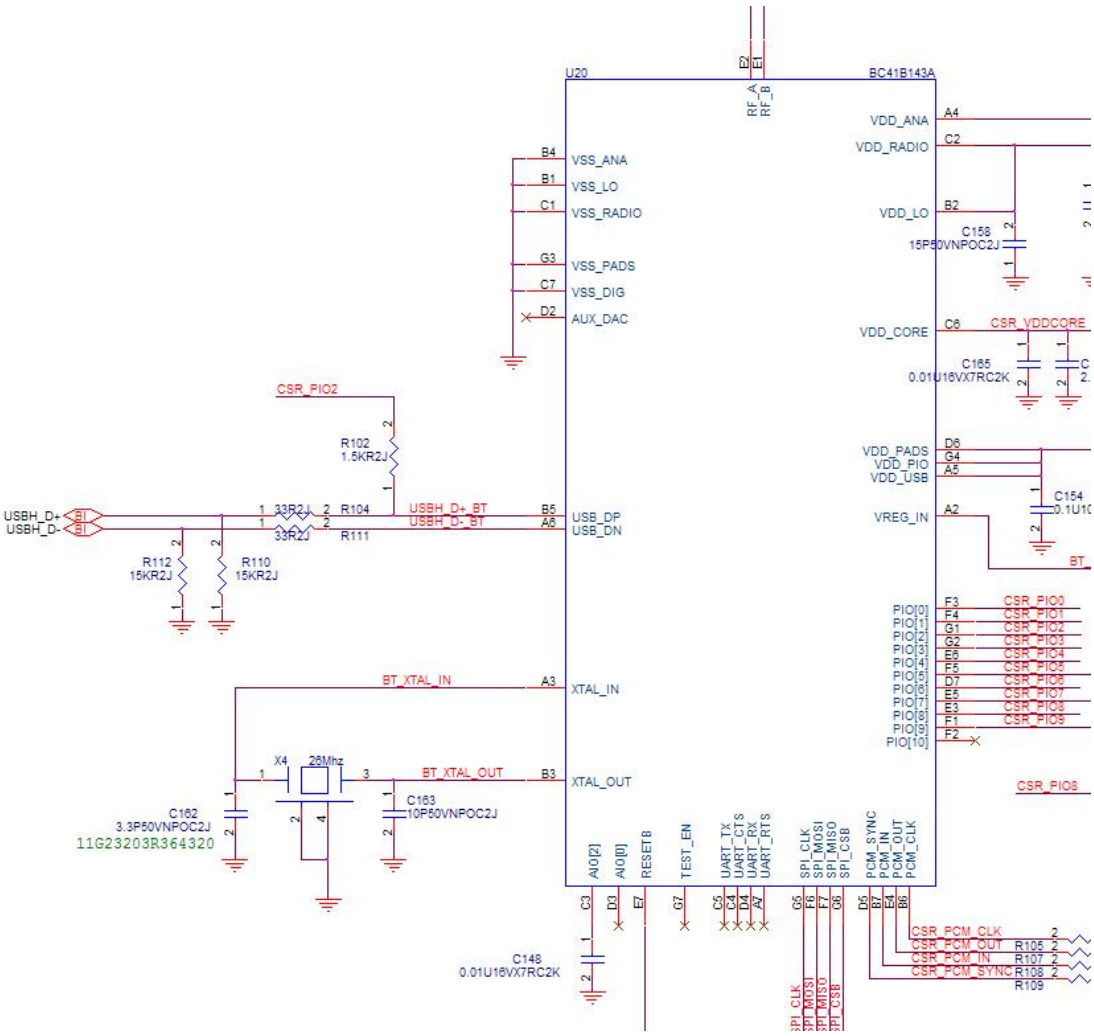


Figure 24. BT connection

7. Power Consumption

7.1 Power over standard

In the assembly line we will follow below procedure to do power consumption test.

A. The device connects the power sourcing via dummy battery.

B. Open the mobile phone.

C. Close the modem part. -> Disable the phone.

D. Lock the hold key let the phone into idle mode.

E. Read the counter on the power supply.

F. Check the power consumption between 45~60mA, over 60 mA is NG.

The reason, camera circuit short; which will lead to the booting failure.

7.2 CPU consumption too High

If the CPU power consumption too High → 60~80mA, We can remove the R217 try to cut off the power drain to CPU. The current is supply the v_core on CPU. After remove the resistor R217 we can use the power meter to measure the current on the circuit. The reference value is below 10mA. If over the value we can try to change the CPU to extend the idle time.

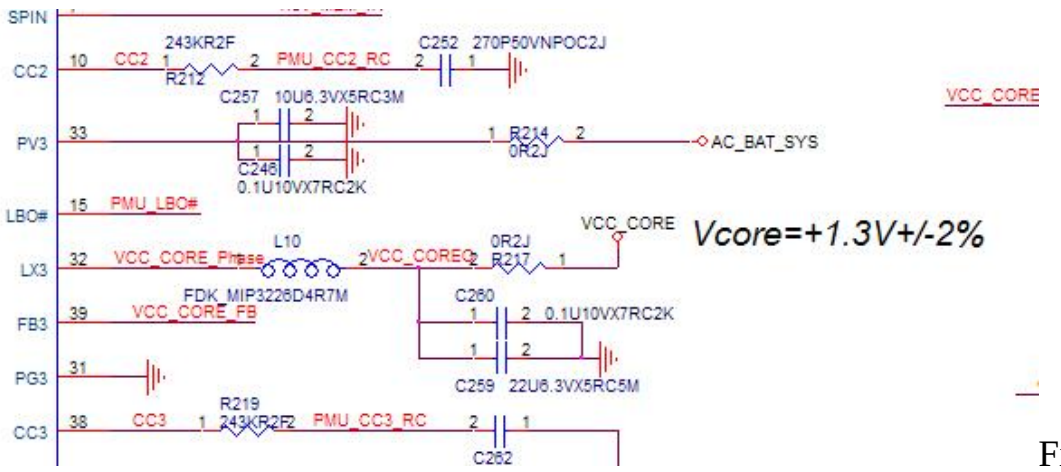


Figure 25. VCC core source

7.3 Camera short

It has two saturations for camera short issue. The wrong way on the VGA Camera assembly will cause the system power short. Another reason is fiber short on the 3M conductive tape. The fiber will cause the power consumption too high on camera connector. We can get the evidence from microscope.

7.4 Others

The idle power consumption is 80~150mA in few devices. The main of the reason is for U951 NG. The U951 is response DC/DC converter to Modem power amplify. Try to remove the R951 and detect the system's power current from the power supply. If the answer is true please replace the U951.

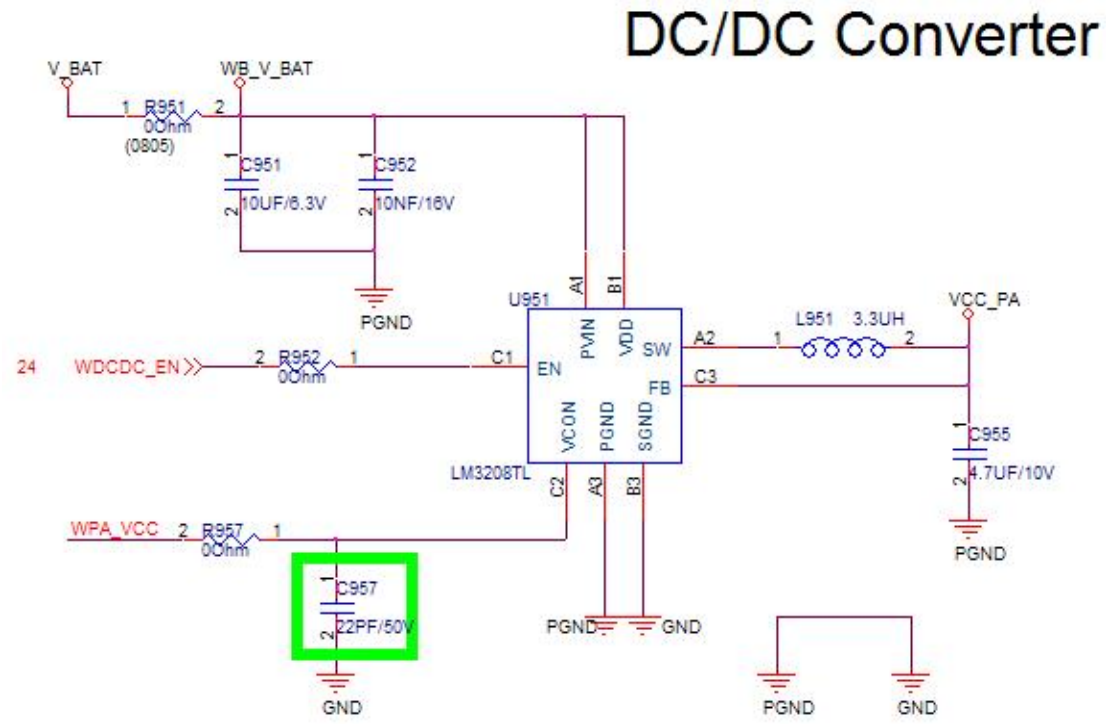
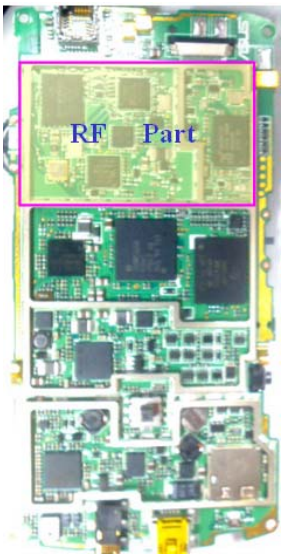
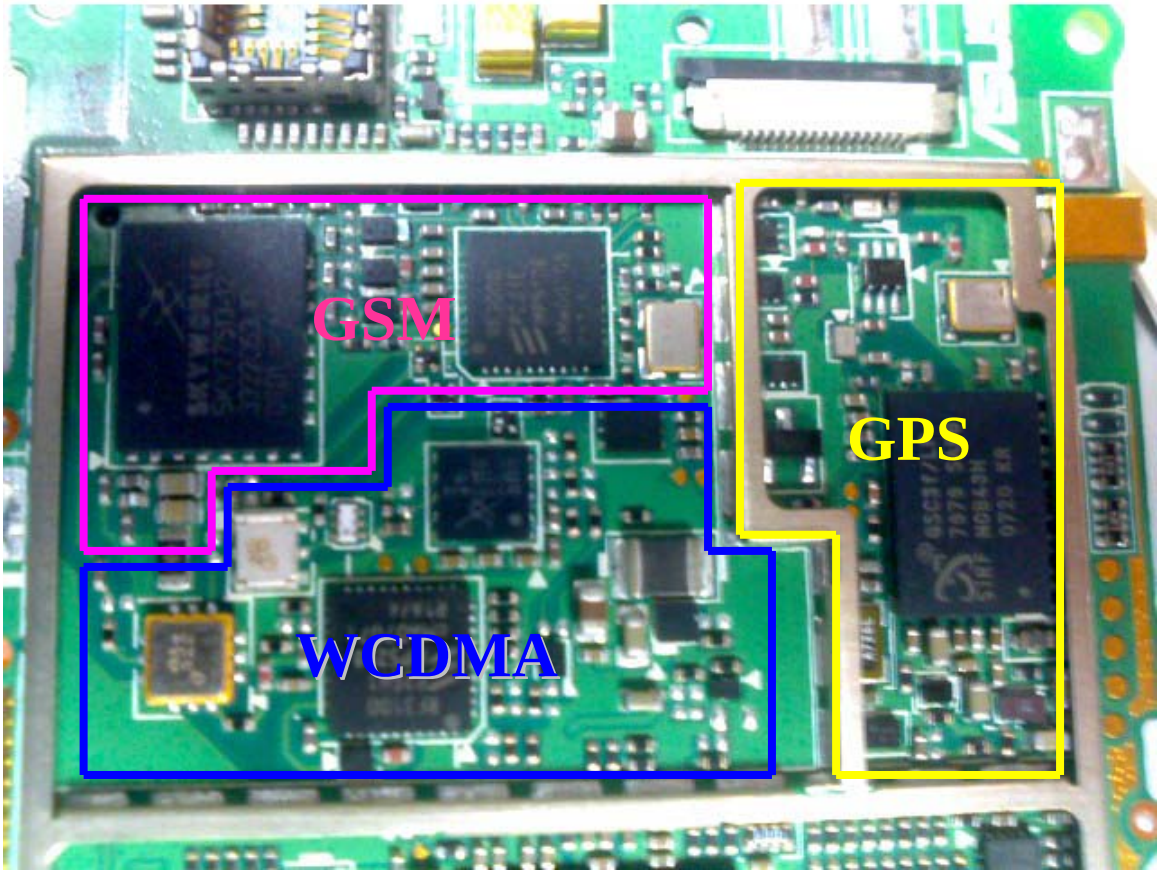


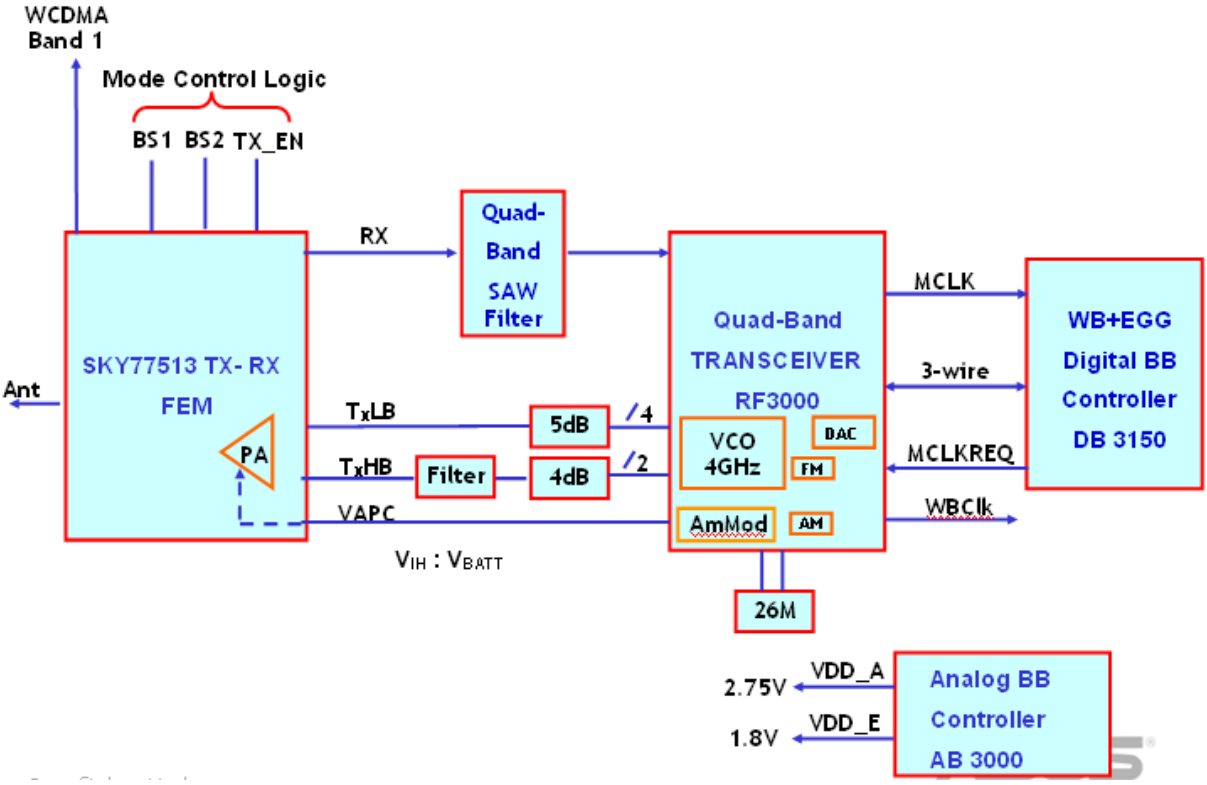
Figure 26. DC/DC converter for wideband PA

8. RF Layout placement





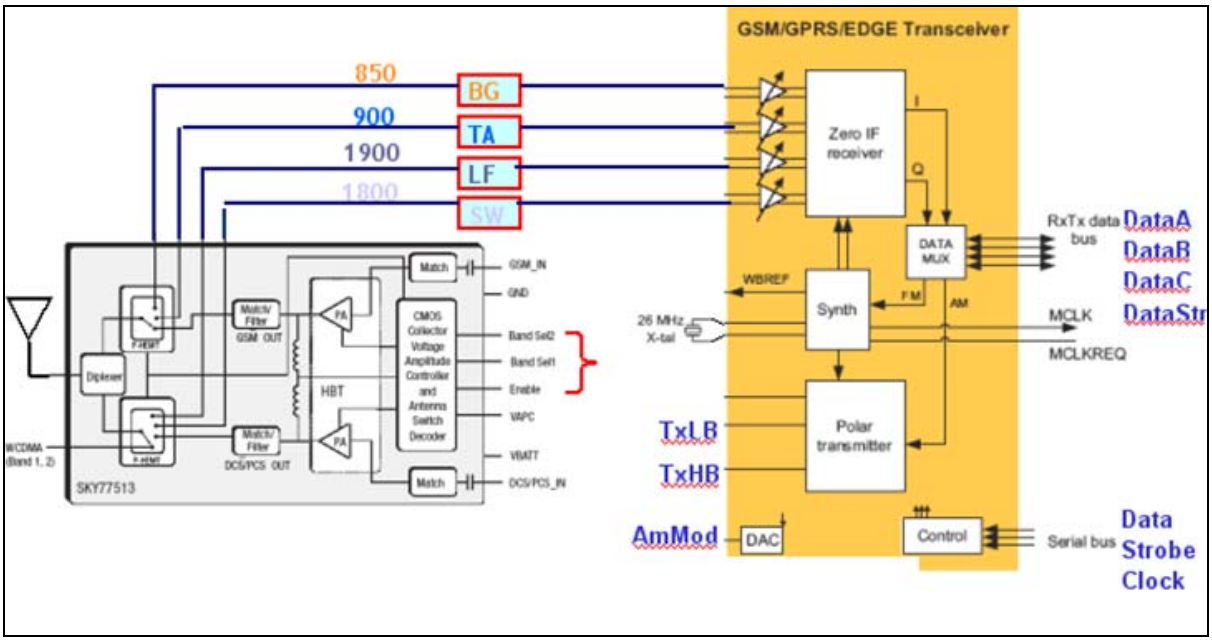
9. RF Block Diagram



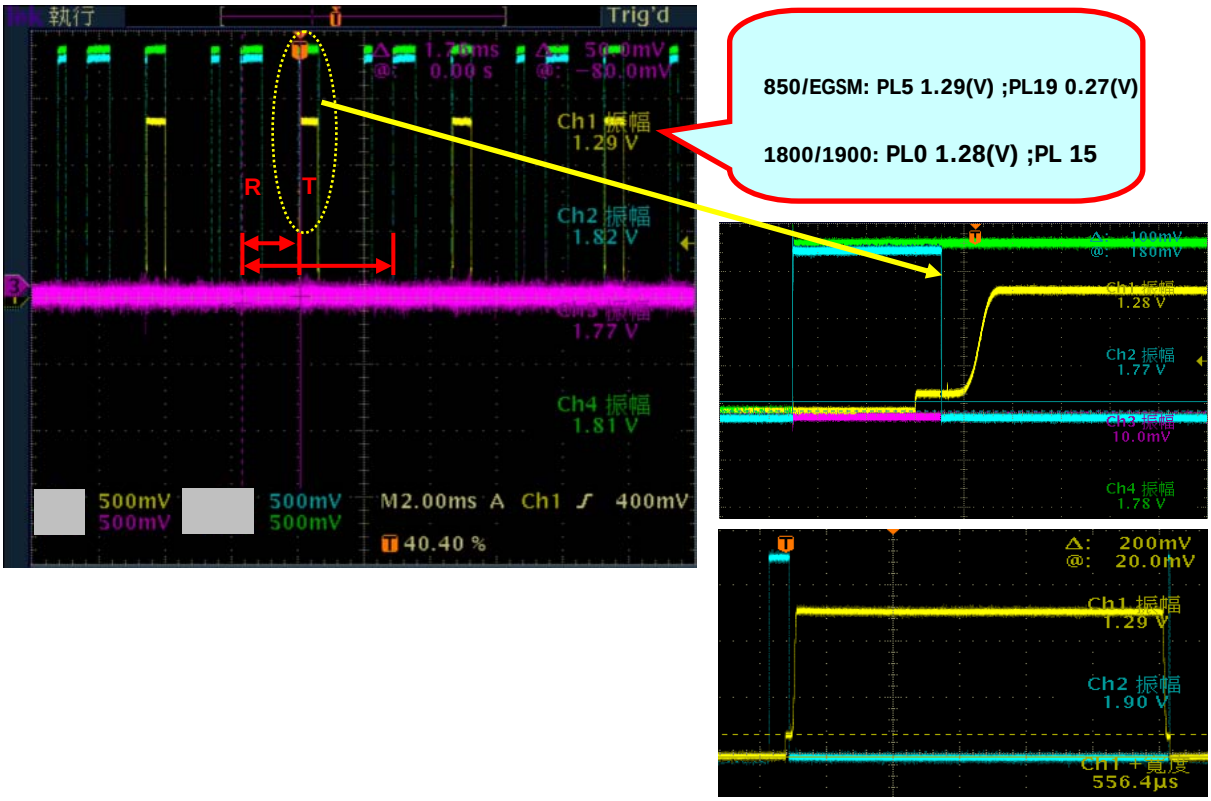
RF FEM Signal True table

Mode	Input Control Bits		
	TX_EN	BS1	BS2
Standby	0	0	0
TX_850/EGSM	0	0	1
TX_DCS/PCS	0	1	1
850_RX	1	0	0
EGSM_RX	1	0	1
DCS_RX	1	1	0
PCS_RX	1	1	1
WCDMA_1	0	1	0

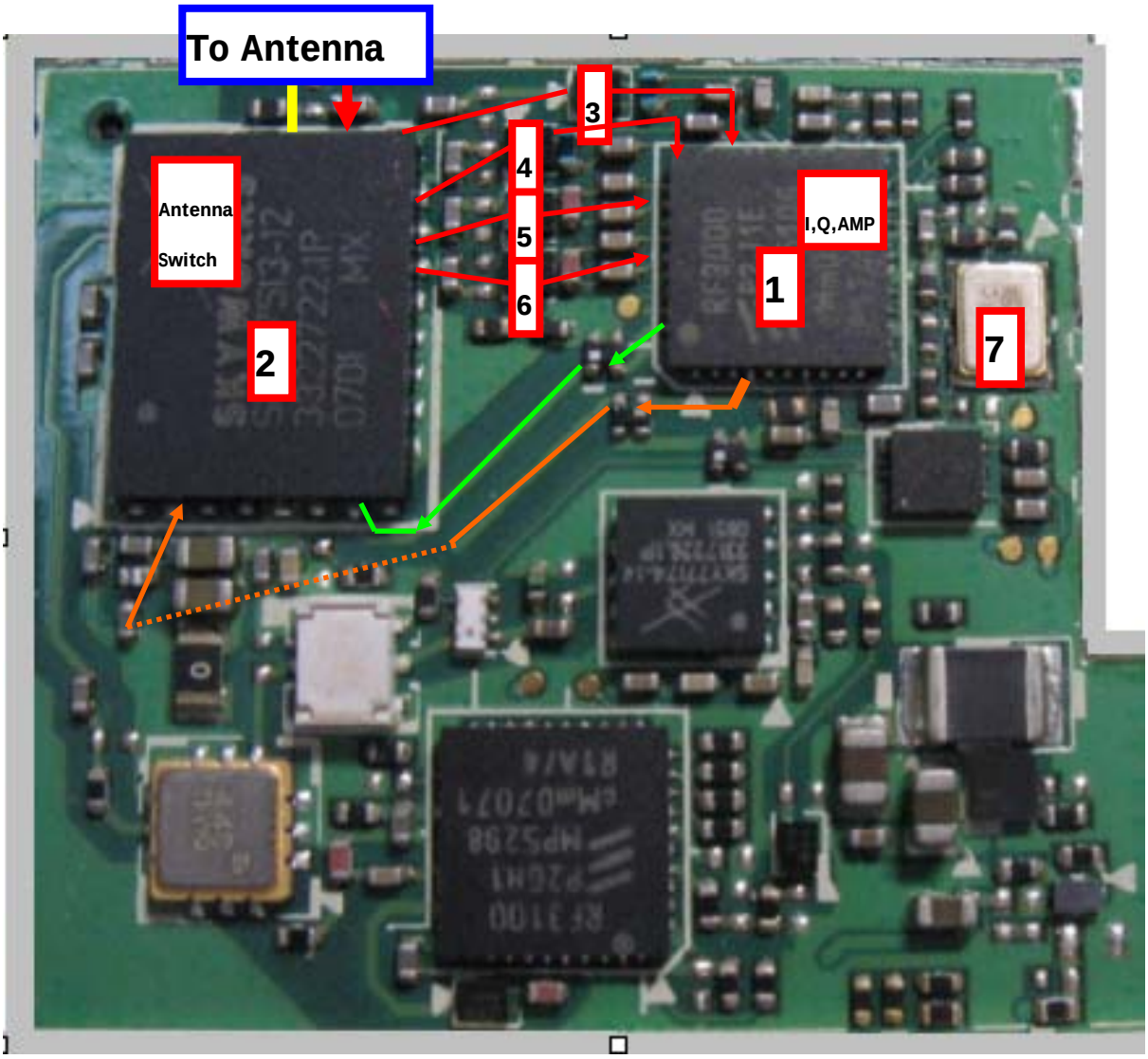
The value “1” means level High , “0” means Level Low.



E-GSM 900 Power (PL5)



9.1 Transmit Mode



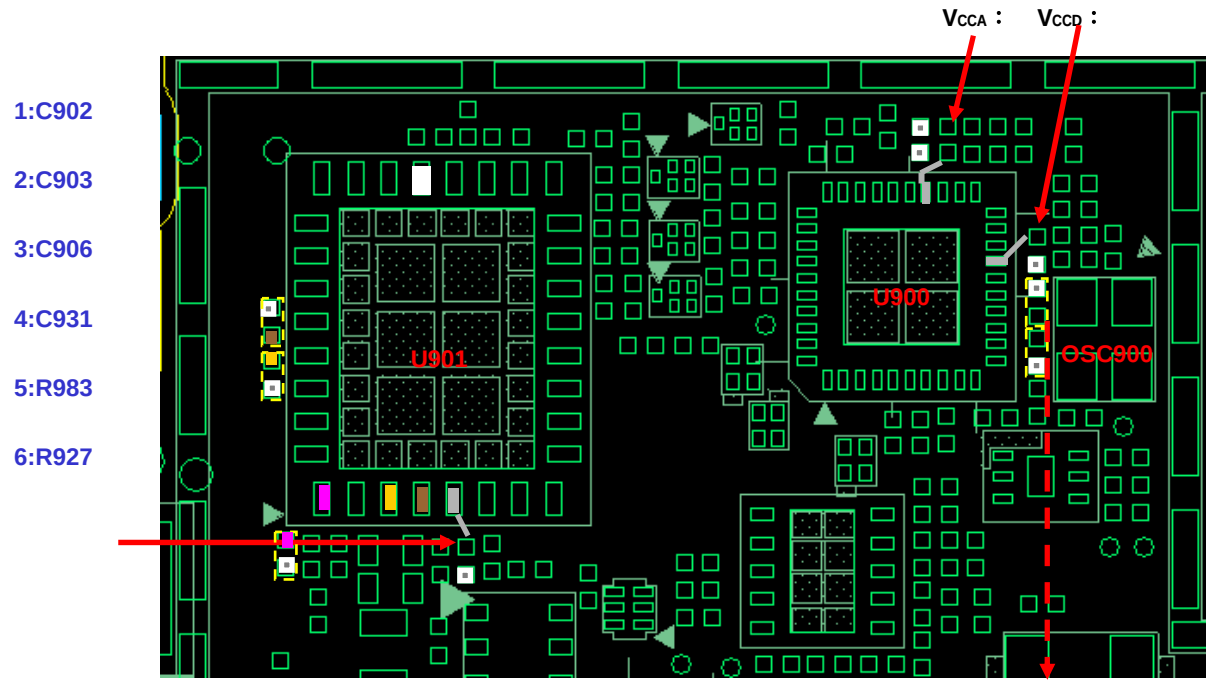
TX path

RX path

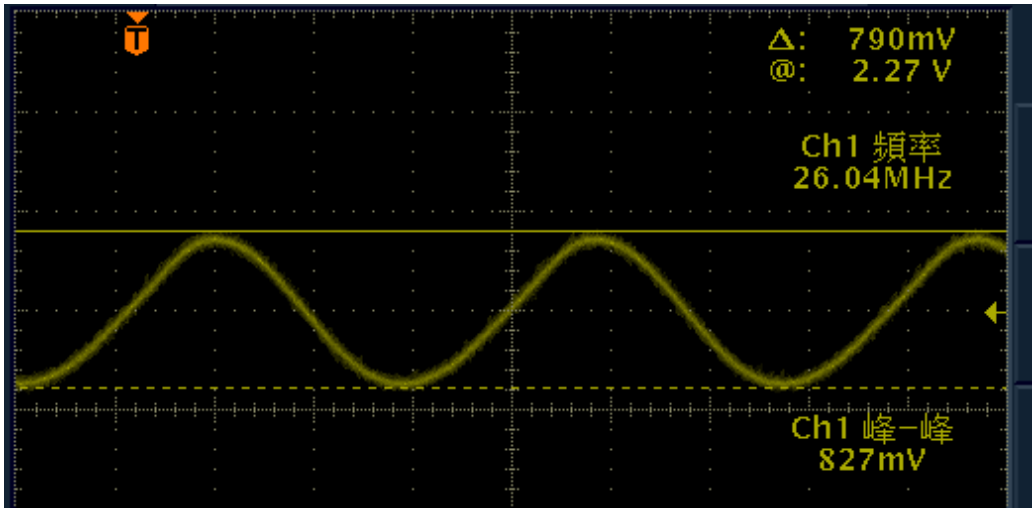
TX 900/850path

TX 1800/1900path

1.	U900:	GSM Transceiver	RF3000
2.	U901:	Power Amplifier	SKY77513
3.	BPF900 : SAW FILTER		BG :850MH
4.	BPF901 : SAW FILTER		TA : 900MH
5.	BPF902 : SAW FILTER		LF : 1800MH
6.	BPF902 : SAW FILTER		SW : 1900MH
7.	OSC900:	26MHz Crystal	NDK/W-168-281



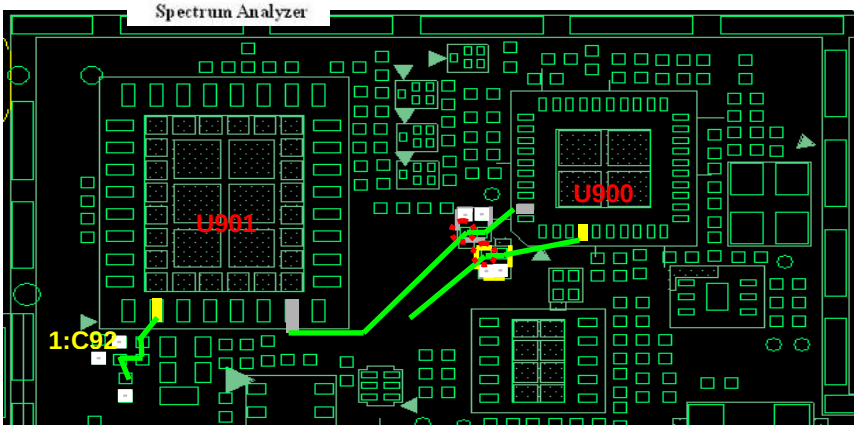
OSC 900: 26MHz

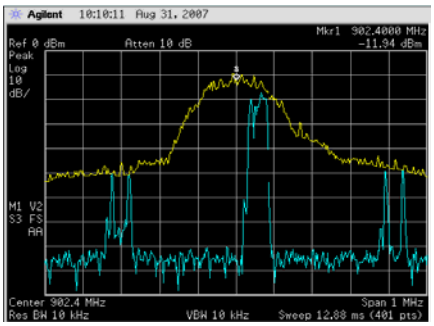


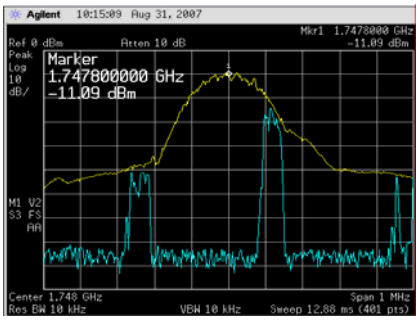
Tx Mode

--TX

Spectrum Analyzer

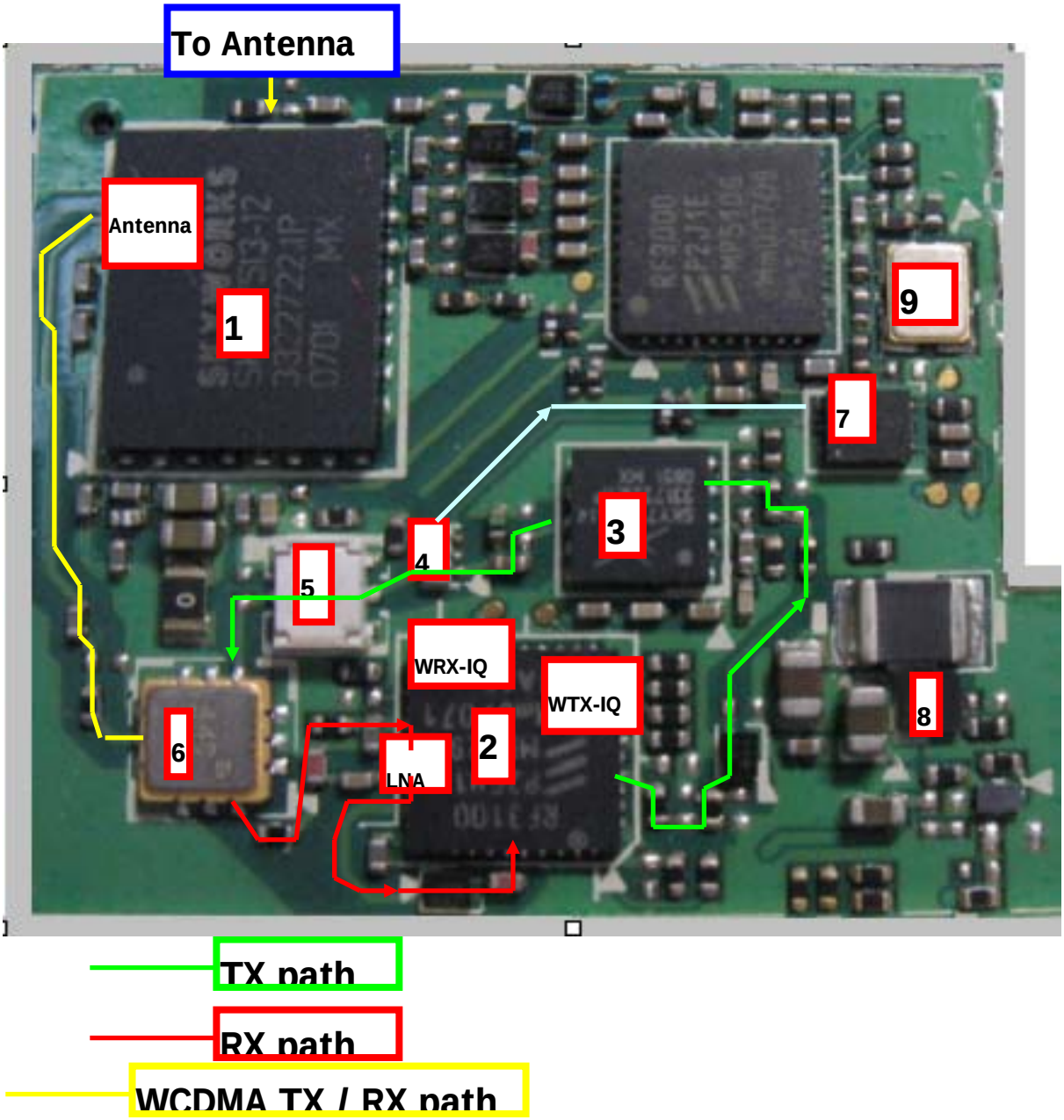






10. WCDMA

10.1 Placement - WCDMA



1. U901: GSM Power Amplifier SKY77513

2. U950: WCDMA Transceiver RF3100

3. U953: WCDMA Power Amplifier SKY77174

4. U955: COUPLER LDC181G9519B-327

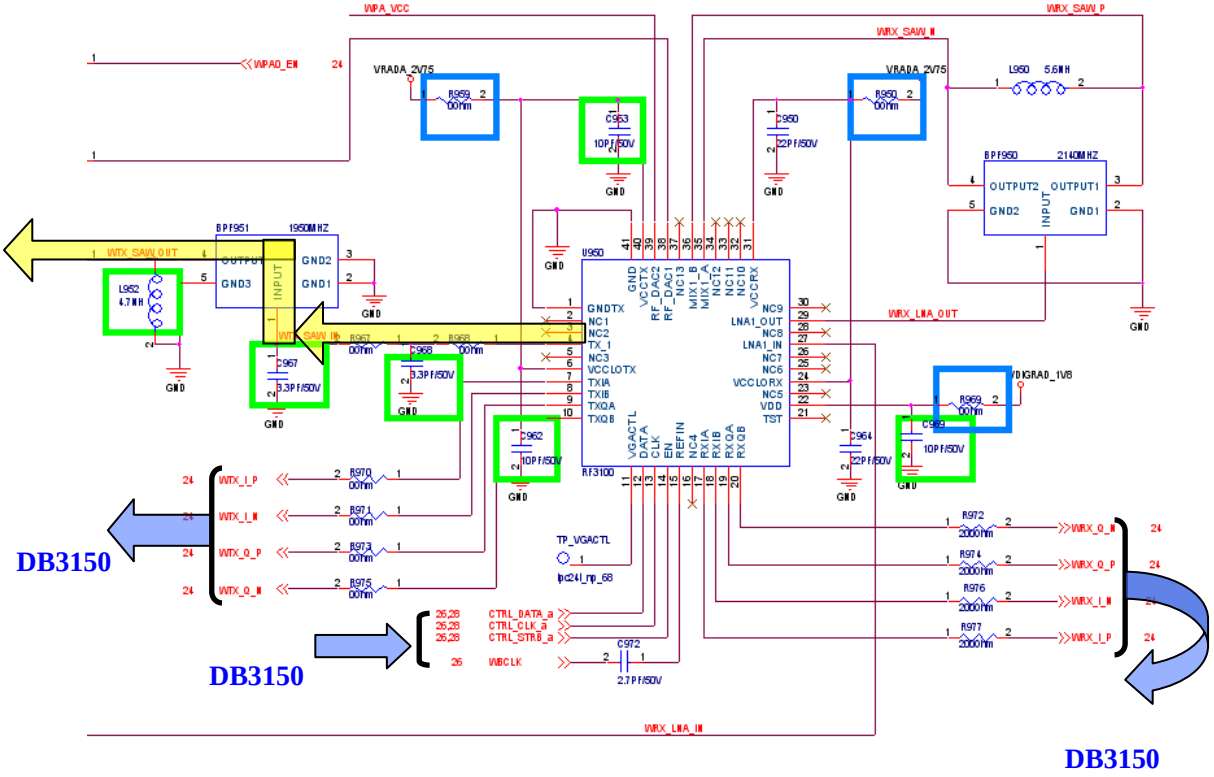
5. U954: ISOLATOR CES201G95DCB000

6. U956: SAW Duplexer **MURATA1G95AA0B00R057**

7. U952: POWER DETECTOR **LMV221SD**

8. U951: DC CONVERTER **LM3208TL**

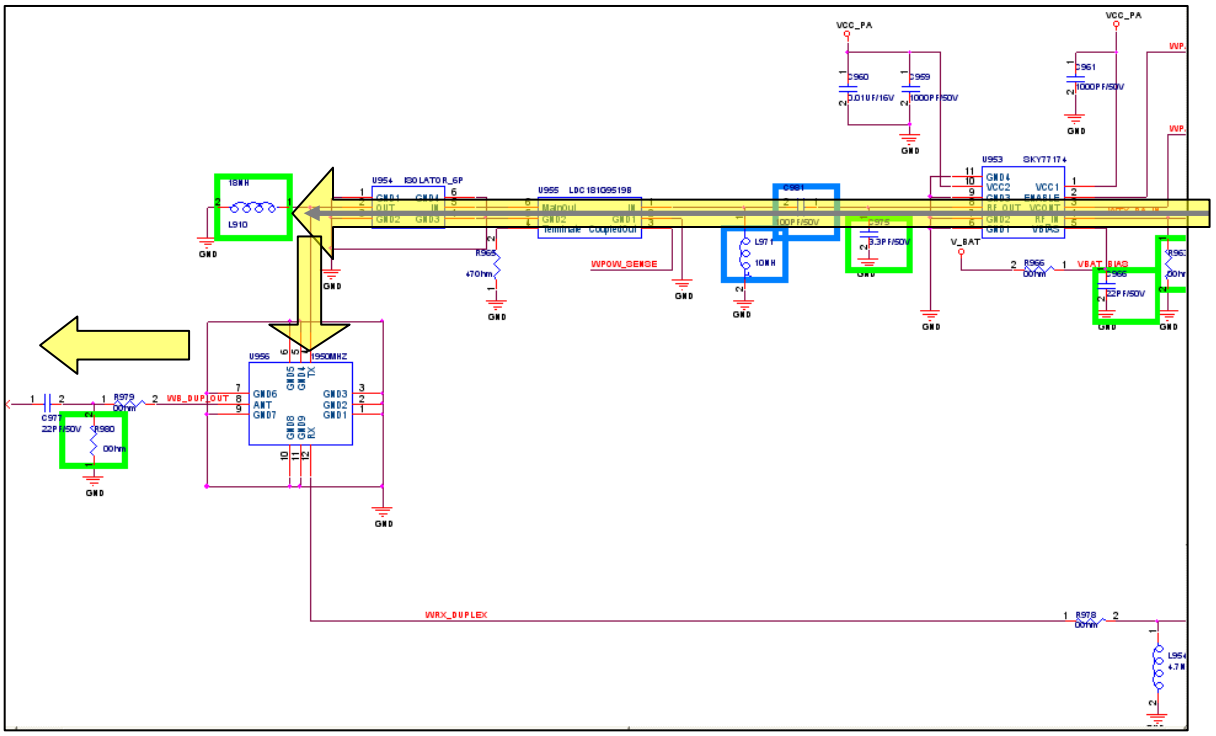
9. OSC900: 26MHz Crystal **NDK/W-168-281**



10.2 WCDMA TX Path

In Transmitter mode.
The signal (WTX_I_P, WTX_I_N, WTX_Q_P, WTX_Q_N) from Base Band DB3150 emit to RF antenna via U950.4. The RF3100 (U950) is WCDMA TRANSMITTER IC will include the frequency boost /frequency locking circuit for WCDMA TX pathway.
Later the WCDMA TX signal will pass power amplify on the WCDMA PA SKY77174 via Band Passes SAW Filter (BPF1950). In the same time, it will be processed by matching circuits sequentially.
The output power passes through coupler (U955), isolator (U954), duplexer (U956), to the T/R switch (U901) on the FEM (SKY77513). Finally the power will radiated via matting circuit and connector (Con900).

WCDMA TX Schematic path



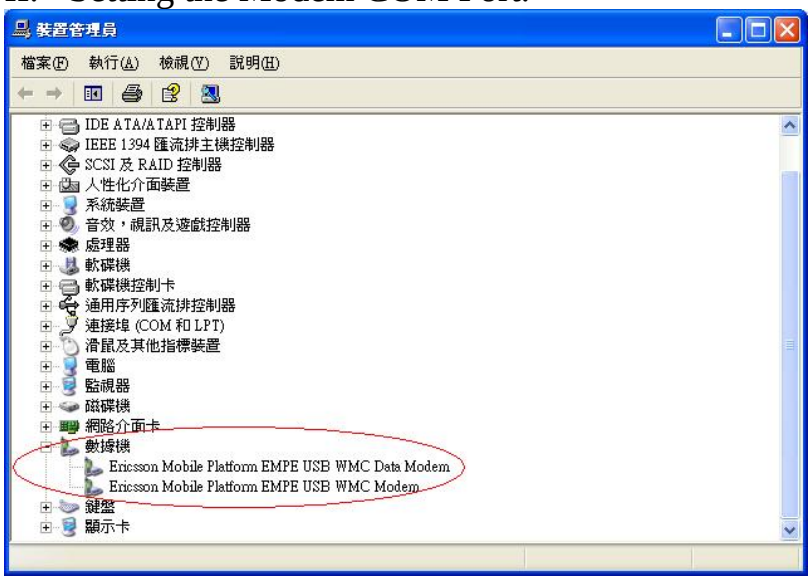
10.3 TX Measurement

A WCDMA TX Power_TP Mode Measurement Method:

K. Connected PC and Pegasus Pro by (USB Cable ,RF Cable, Fixture)

I. Power ON .

II. Setting the Modem COM Port.



L. Launch the P_E_Tool. Click the CDMA TX mode.

M. Choose Com Port

N. Choose Band I (Pegasus Pro Only Band I)

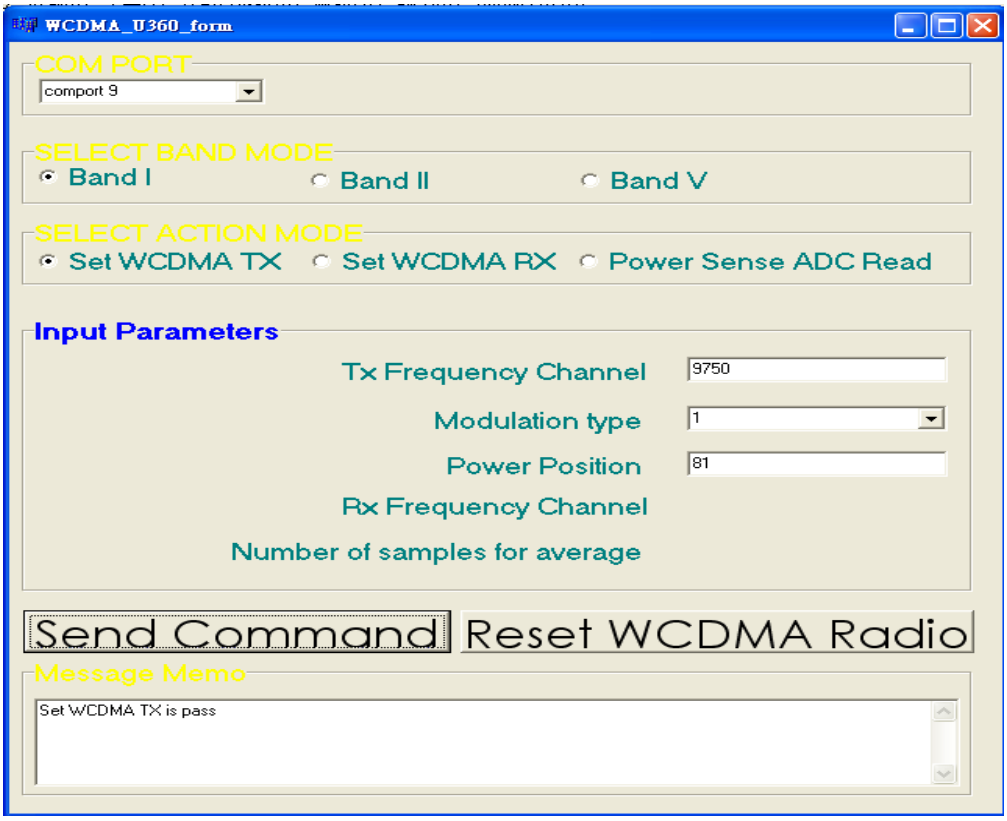
O. Choose WCDMA TX

Setting Power Refer below table

WTXC,1,poistion		TTOL,1,poistion				
Poisition	Power	<ADC_Target>	<APC_Init>	<DPC_Init>	<WPA_Bias>	<WDCDCREF>
86		0x3A7	0x372	0x3FF	0x21E	0x20C
85	25.65	0x391	0x365	0x3FF	0x21E	0x20C
84	25.43	0x378	0x35A	0x3FF	0x208	0x1FC
83	24.85	0x361	0x350	0x3FF	0x1F3	0x1EB
82	24.15	0x361	0x350	0x3FF	0x1F3	0x1EB
81	23.08	0x336	0x342	0x3FF	0x1C8	0x1AA
80	21.32	0x31E	0x340	0x3FF	0x1B3	0x168
79	20.7	0x30A	0x33D	0x3FF	0x19E	0x147
78	19.31	0x2F4	0x33B	0x3FF	0x188	0x127
77	18.33	0x2DD	0x336	0x3FF	0x173	0x116
76	17.25	0x2C6	0x331	0x3FF	0x15E	0x106
75	11.74	0x2B0	0x32E	0x3FF	0x148	0xF5

74	10.87	0x29B	0x32C	0x3FF	0x133	0xE5
73	9.67	0x285	0x323	0x3FF	0x11E	0xE5
72	8	0x26E	0x31B	0x3FF	0x108	0xE5
71	7.85	0x258	0x313	0x3FF	0xF3	0xE5
70	6.67	0x241	0x30B	0x3FF	0xDE	0xE5
69	5.8	0x229	0x304	0x3FF	0xC8	0xE5
68	4.72	0x216	0x2FB	0x3FF	0xC8	0xE5
67	3.64	0x1FF	0x2F0	0x3FF	0xC8	0xE5
66	2.7	0x1EA	0x2E6	0x3FF	0xC8	0xE5
65	1.68	0x1D2	0x2DB	0x3FF	0xC8	0xE5
64	0.61	0x1BB	0x2D0	0x3FF	0xC8	0xE5
63	-0.42	0x1A5	0x2C5	0x3FF	0xC8	0xE5
62	-1.38	0x190	0x2BB	0x3FF	0xC8	0xE5
61	-2.42	0x179	0x2B0	0x3FF	0xC8	0xE5
60	-3.4	0x164	0x2A6	0x3FF	0xC8	0xE5
50	-13.97	0xCC	0x243	0x3FF	0xC8	0xE5
40	-24.28	0xAE	0x1ED	0x3FF	0xC8	0xE5
30	-34.1	0xAB	0x19B	0x3FF	0xC8	0xE5
20	-40.54	0xAA	0x14D	0x3FF	0xC8	0xE5
10	-42.34	0xAA	0xFF	0x3FF	0xC8	0xE5
0	-42.32	0xAA	0xAD	0x3FF	0xC8	0xE5

73	9.67	0x285	803	1023	286	229

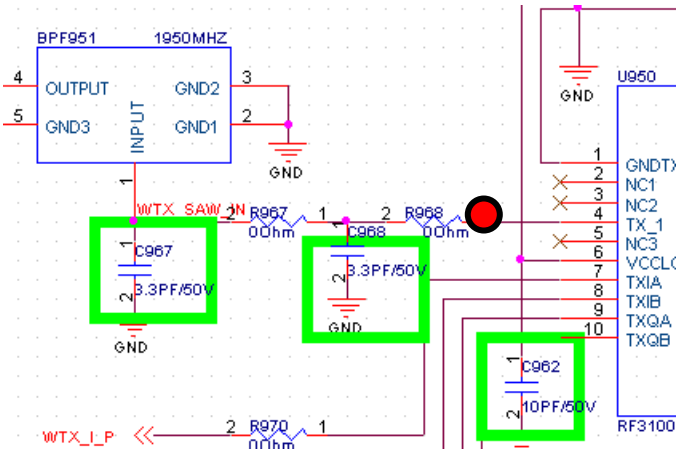


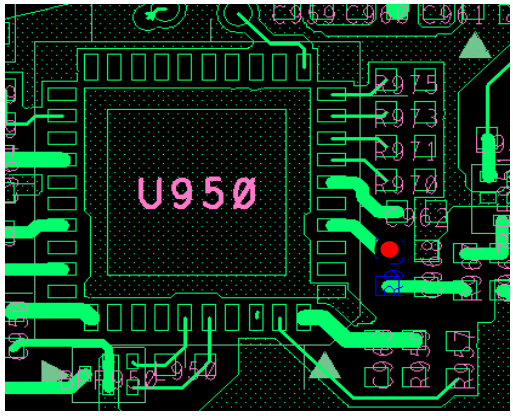
10.4 Test procedure:

TX channel set to 9750 (TX frequency = 1950MHz), Module Type=1, Power Position=81, use the spectrum to measure the value.

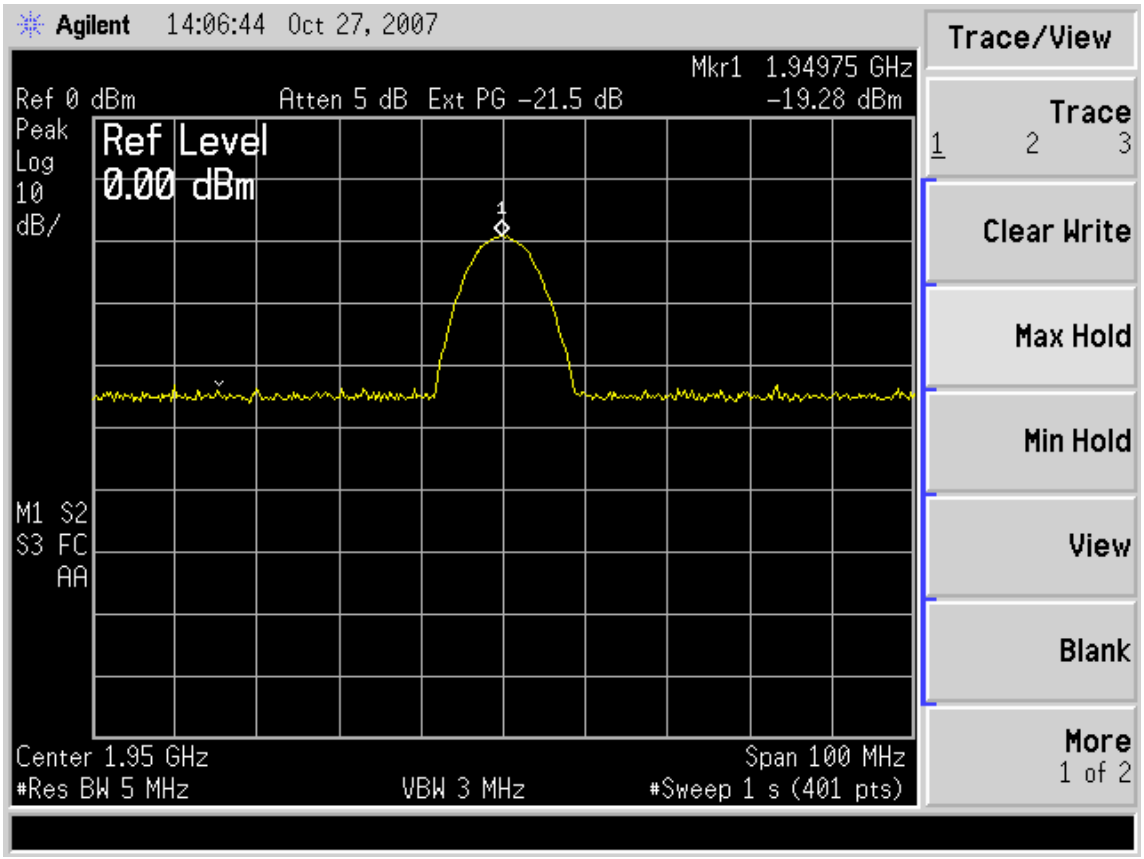
Spectrum Setting: Freq=1950MHz. Caution: Must add the attenuator/DC Blocking or series connection 100PF Cap on the end of the Cable. It will avoid the direct current damage the spectrum authentically.

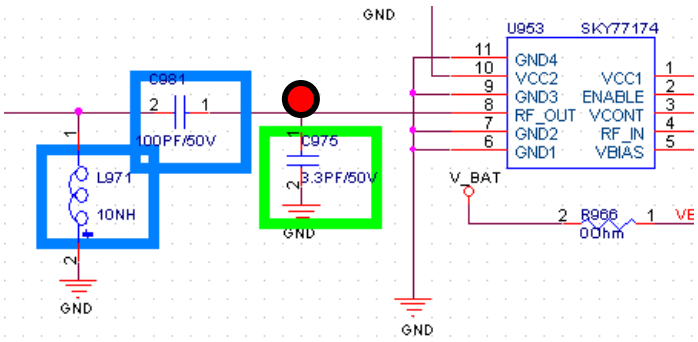
The Power values all are relativity not absolute.

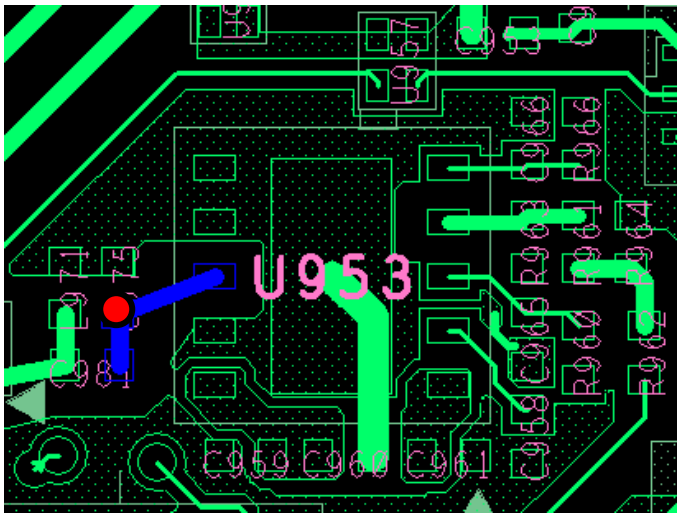




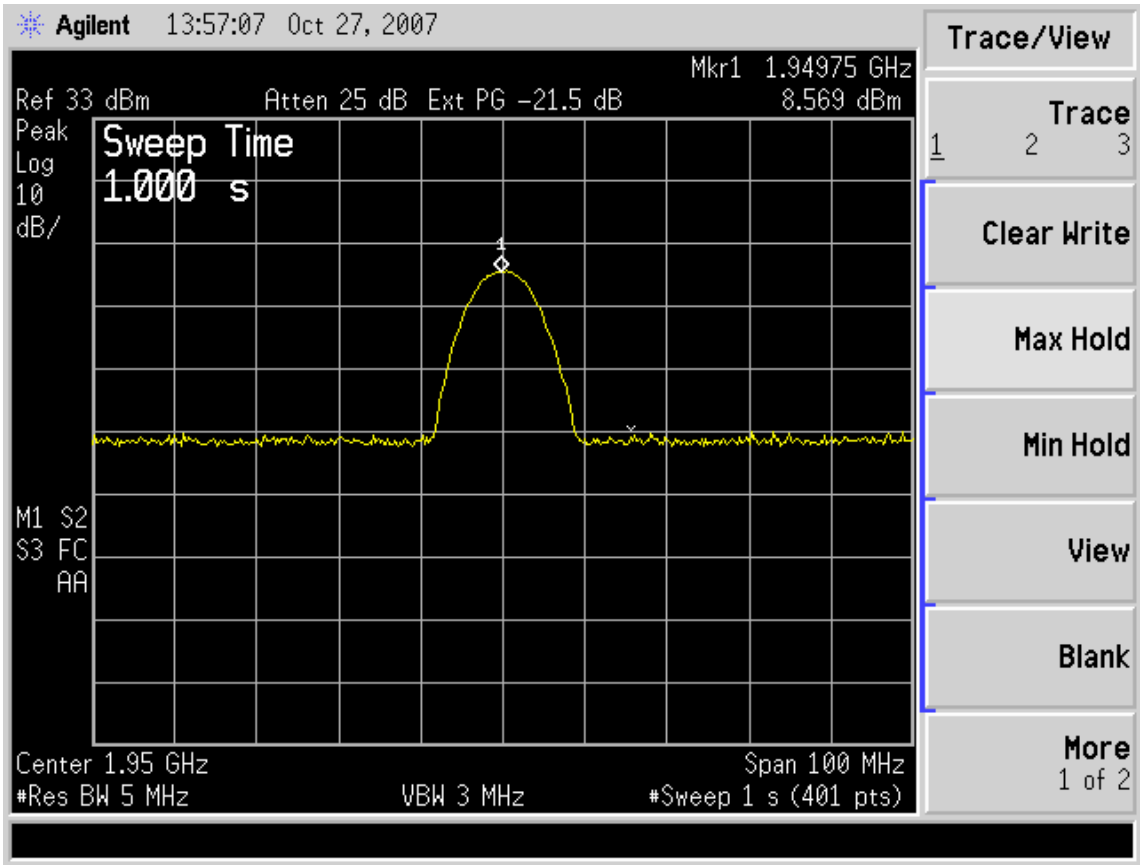
R968.1



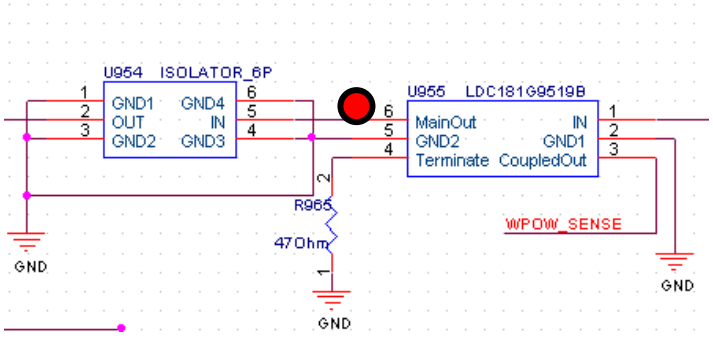

GND
U953
SKY77174
GND4
VCC2
GND3
RF_OUT
GND2
GND1
VCC1
ENABLE
VCONT
RF_IN
VBIAS
C981
100PF/50V
L971
10NH
C975
3.3PF/50V
V_BAT
R966
0Ohm

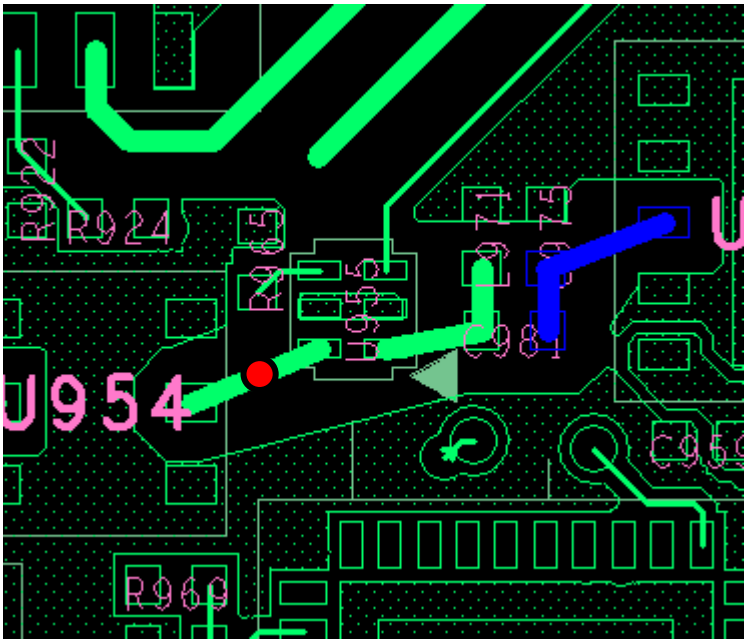

U953

C975.1

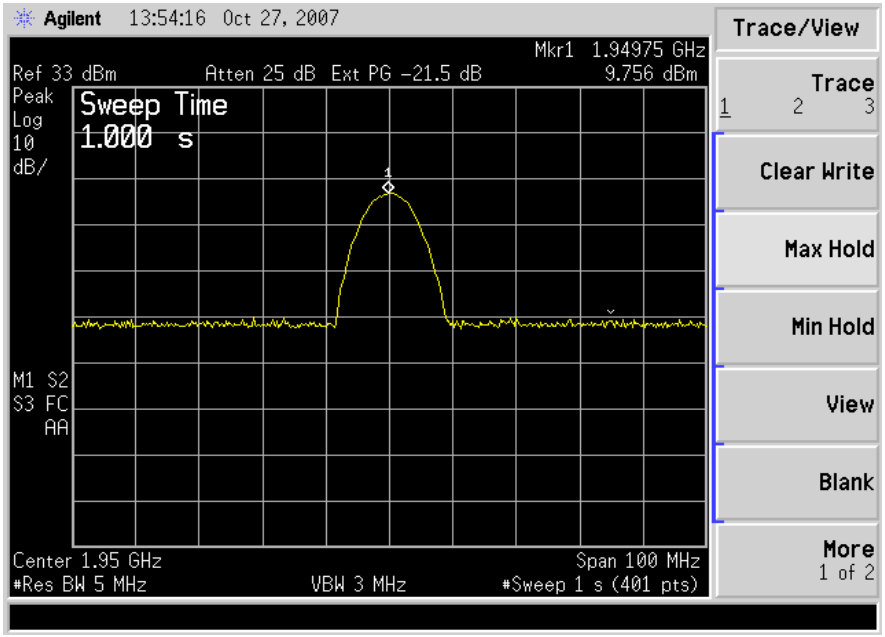

Agilent 13:57:07 Oct 27, 2007
Mkr1 1.94975 GHz
Ref 33 dBm
Atten 25 dB Ext PG -21.5 dB
8.569 dBm
Peak
Log
10
dB/
Sweep Time
1.000 s
M1 S2
S3 FC
AA
Center 1.95 GHz
#Res BW 5 MHz
VBW 3 MHz
Span 100 MHz
#Sweep 1 s (401 pts)
Trace/View
Trace
1 2 3
Clear Write
Max Hold
Min Hold
View
Blank
More
1 of 2

WCDMA TX Path_Power Sensor_pin6

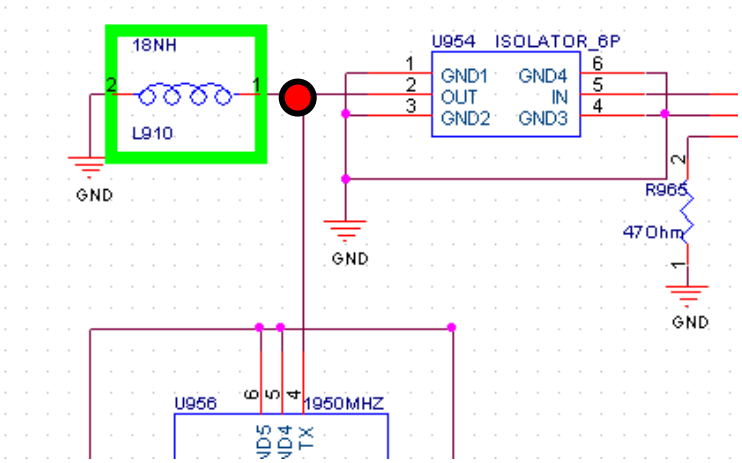


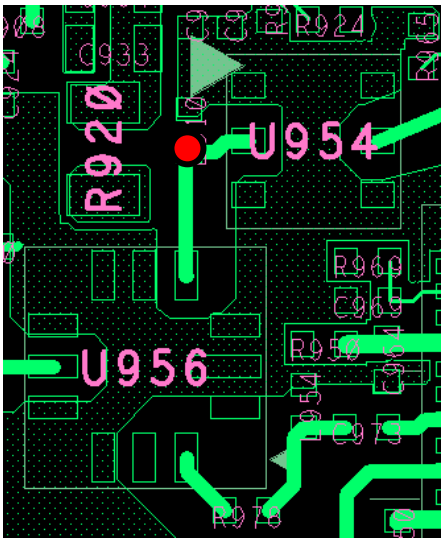


U954.6

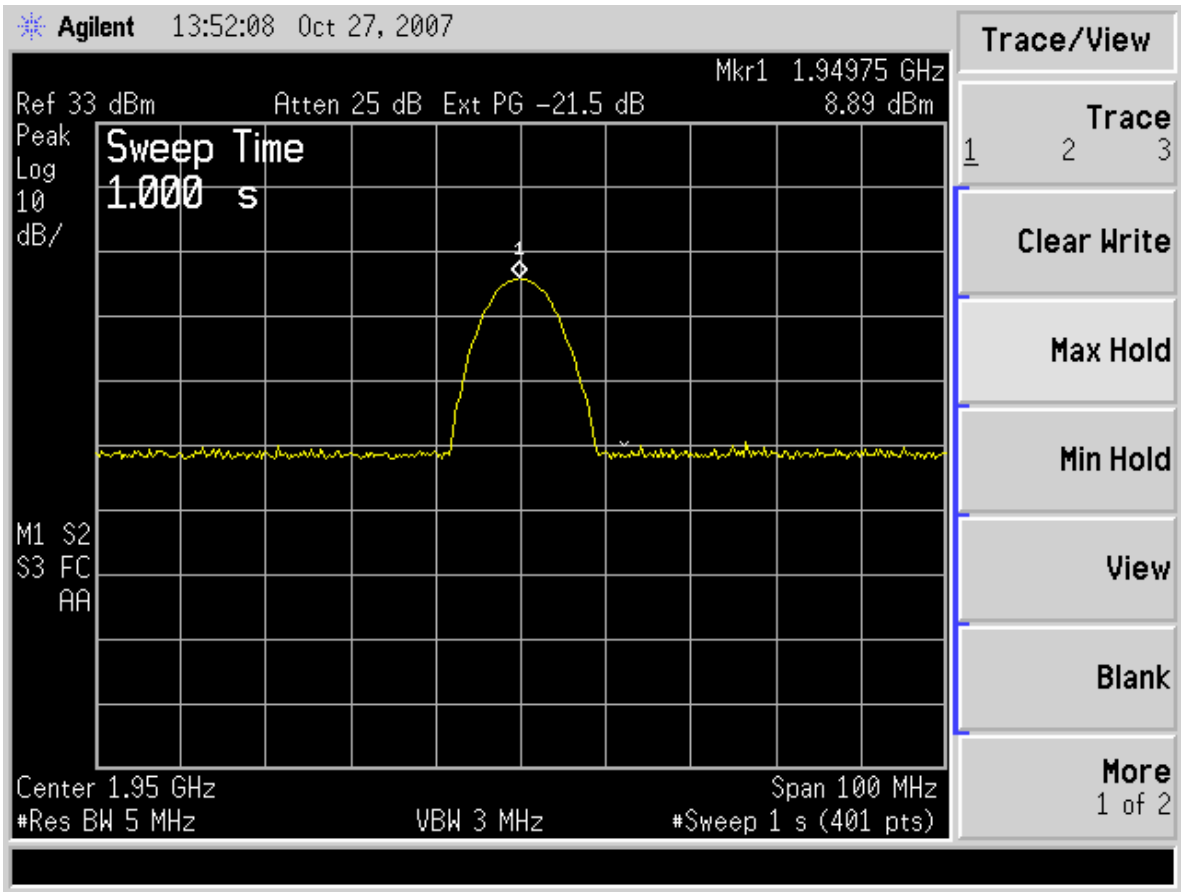


WCDMA TX Path Isolator Output_L901

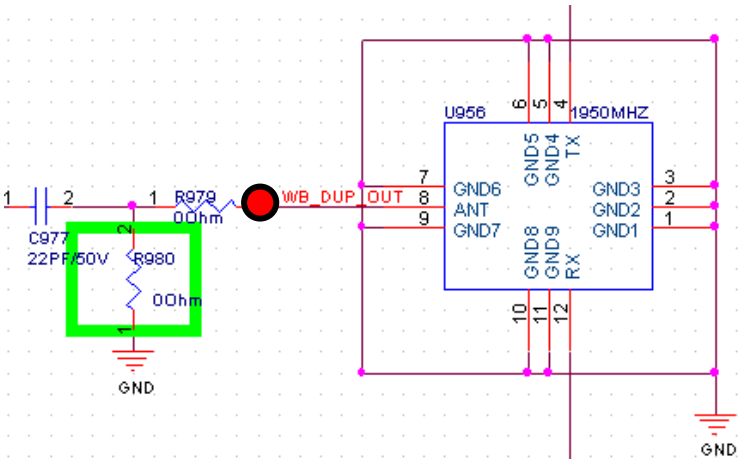


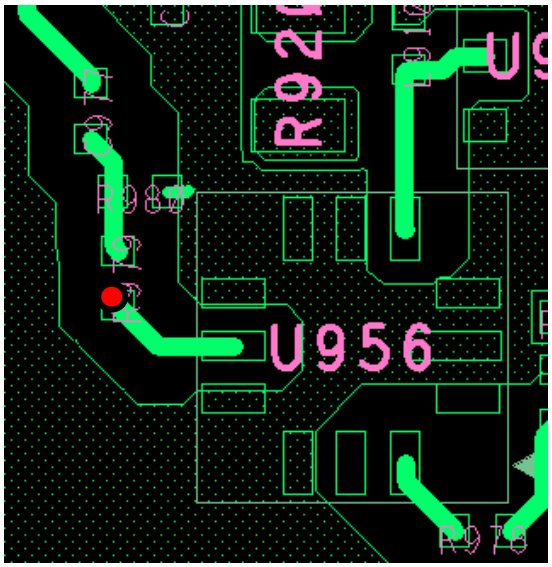


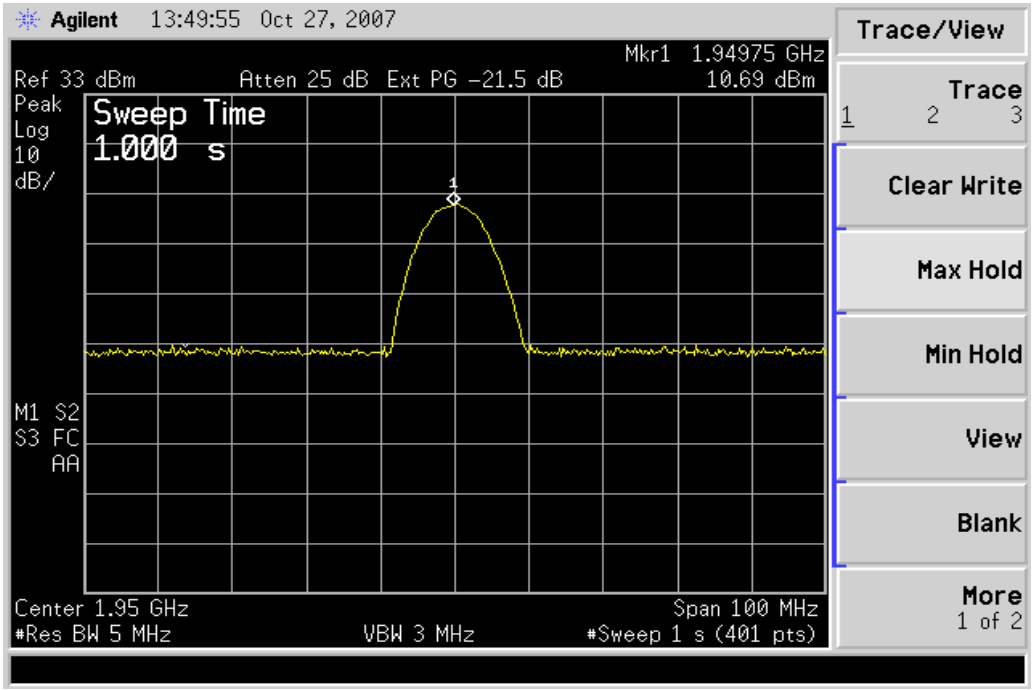
L901



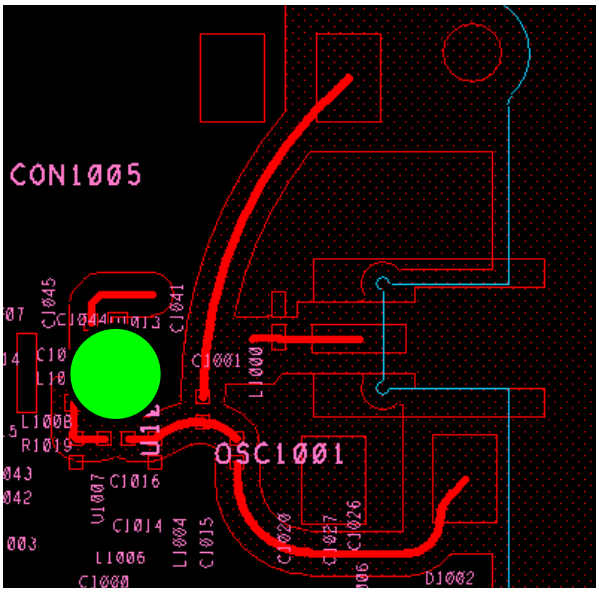
WCDMA TX Path Duplexer Output_R979

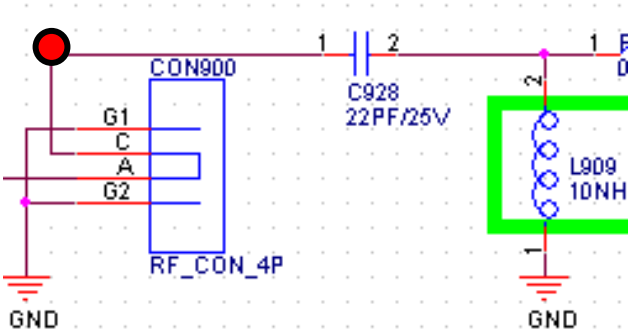


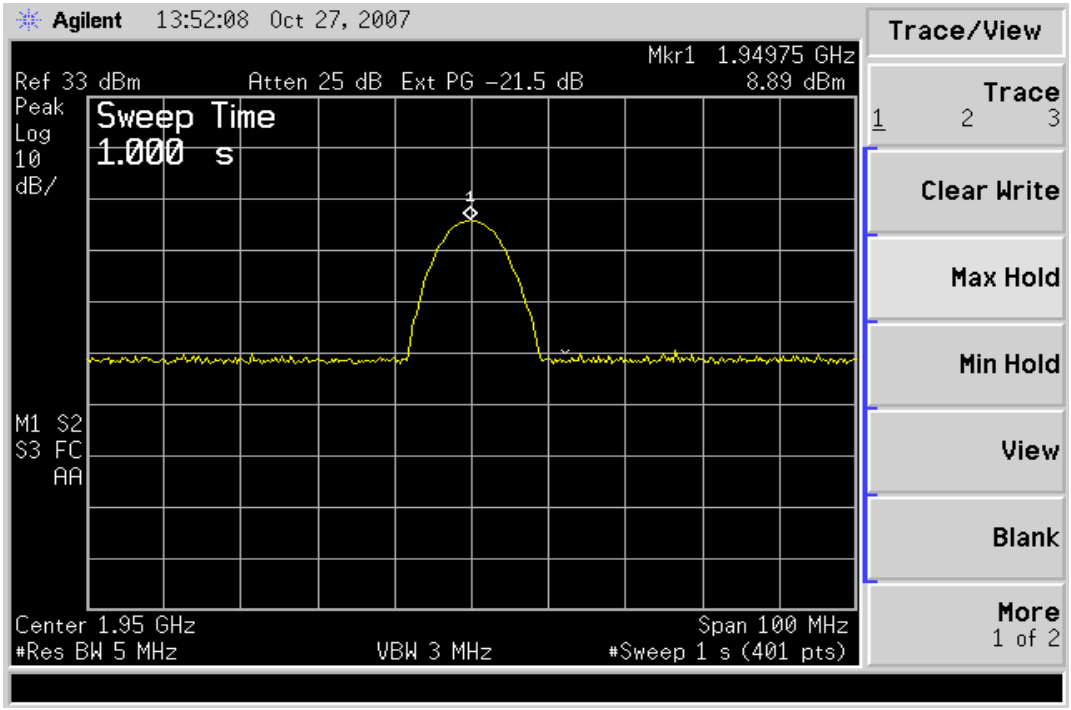




WCDMA TX Path RF Connector



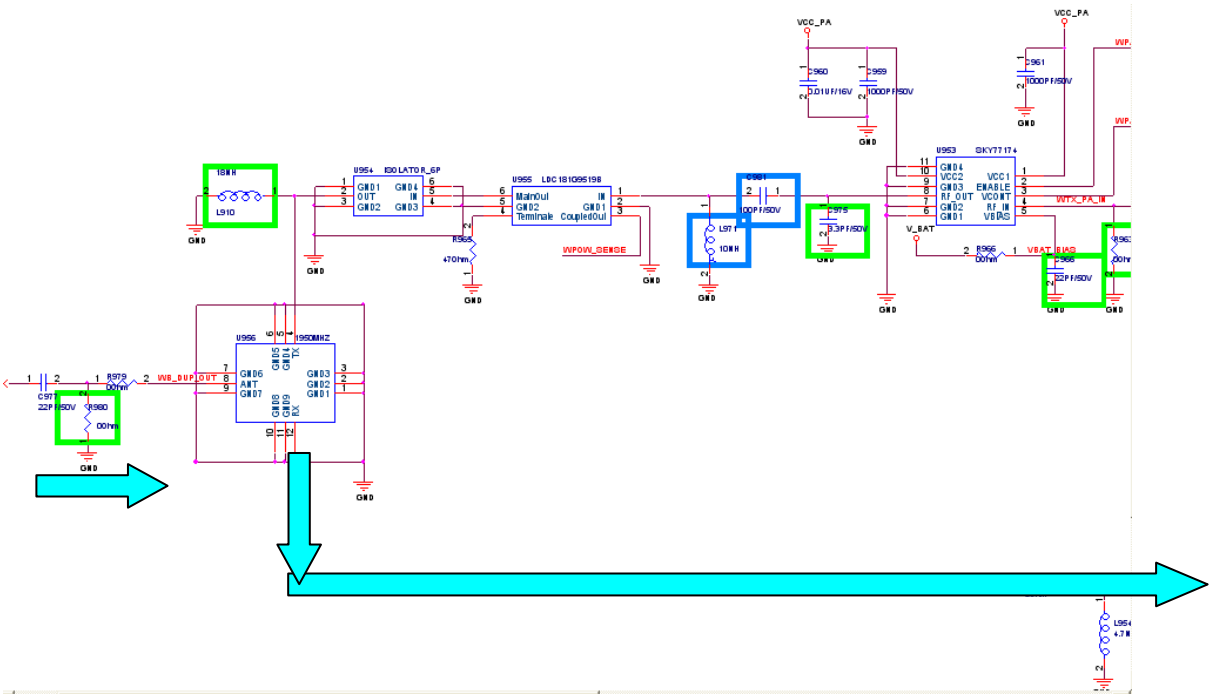




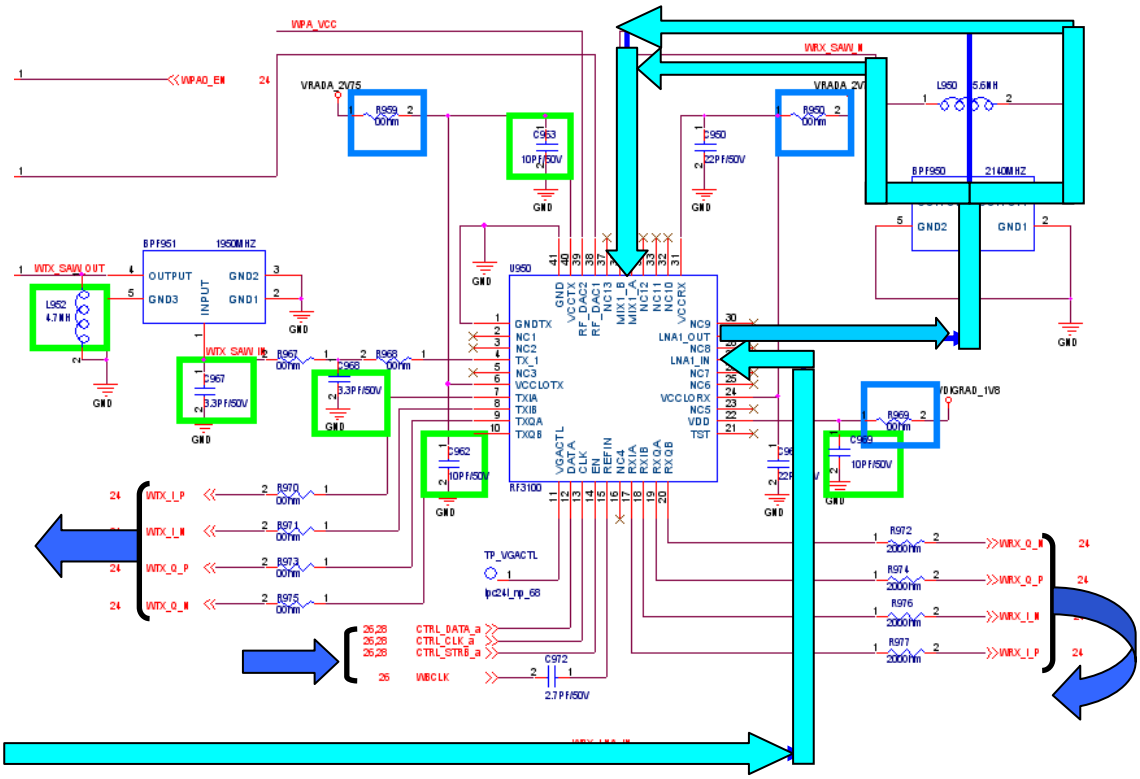
10.5 WCDMA RX

In Receiver Mode. Receive the radiation signal from base station via phone antenna. The signal passes through Band select of U901 GSM-FEM (T/R switch + SAW filter) and Duplexer (U956) sequentially.
WCDMA TRANSMITTER IC RF3100 (U950), built-in LNA, receives the signal from duplexer.
Then the signal is transmitted to RX-SAW filter (BPF950) and returns to Mixer input on the WCDMA TRANSMITTER IC RF3100(U950) PIN X1_A ,MX1_B again.
After down converting the signal's frequency and transforming into IQ signals, the IQ signals (WRX_I_P, WRX_I_N, WRX_Q_P, WRX_Q_NMAX2391) travel to Base Band IC DB3150 (U701).

WCDMA RX Path Schematic_1



WCDMA RX Path Schematic_2



10.6 WCDMA RX Path Measurement

WCDMA RX TP Mode Measure method

A. Connected PC and Pegasus Pro by (USB Cable ,RF Cable, Fixture)
   Power ON .
   Setting the Modem COM Port.

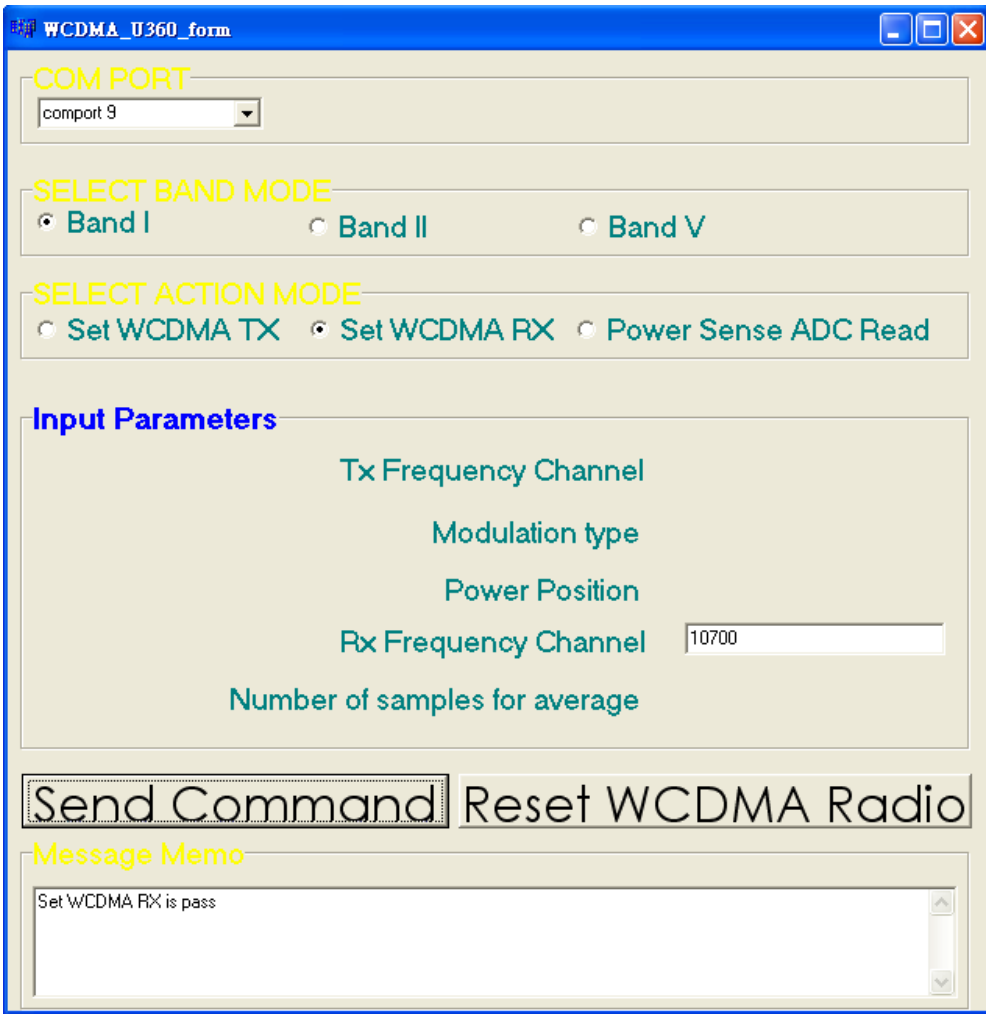
B. Launch the P_E_Tool. Click the CDMA TX mode.

C. Choose Com Port

D. Choose Band I (Pegasus Pro Only Band I)

E. Choose WCDMA RX

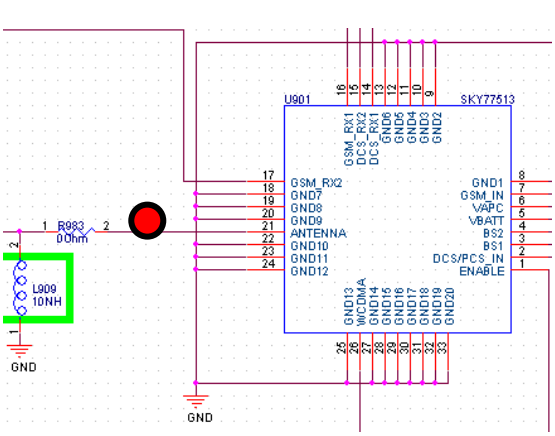
F. Setting the WCDMA RX channel, please set the Agilent 8960 to CW mode .The power: **-30 ~ -40dBm**

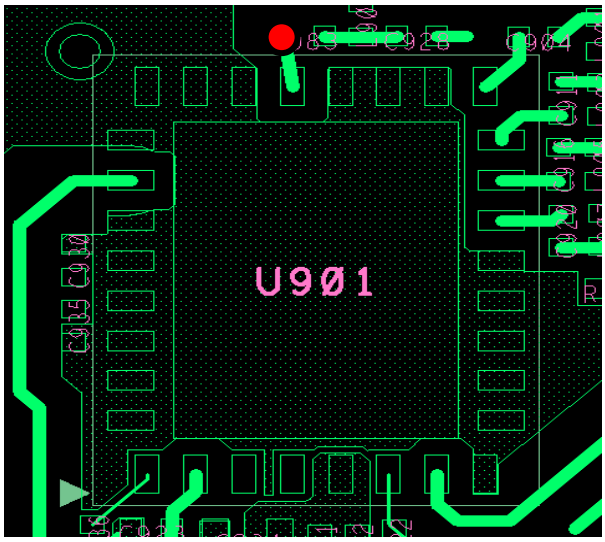


10.7 RX Test procedure

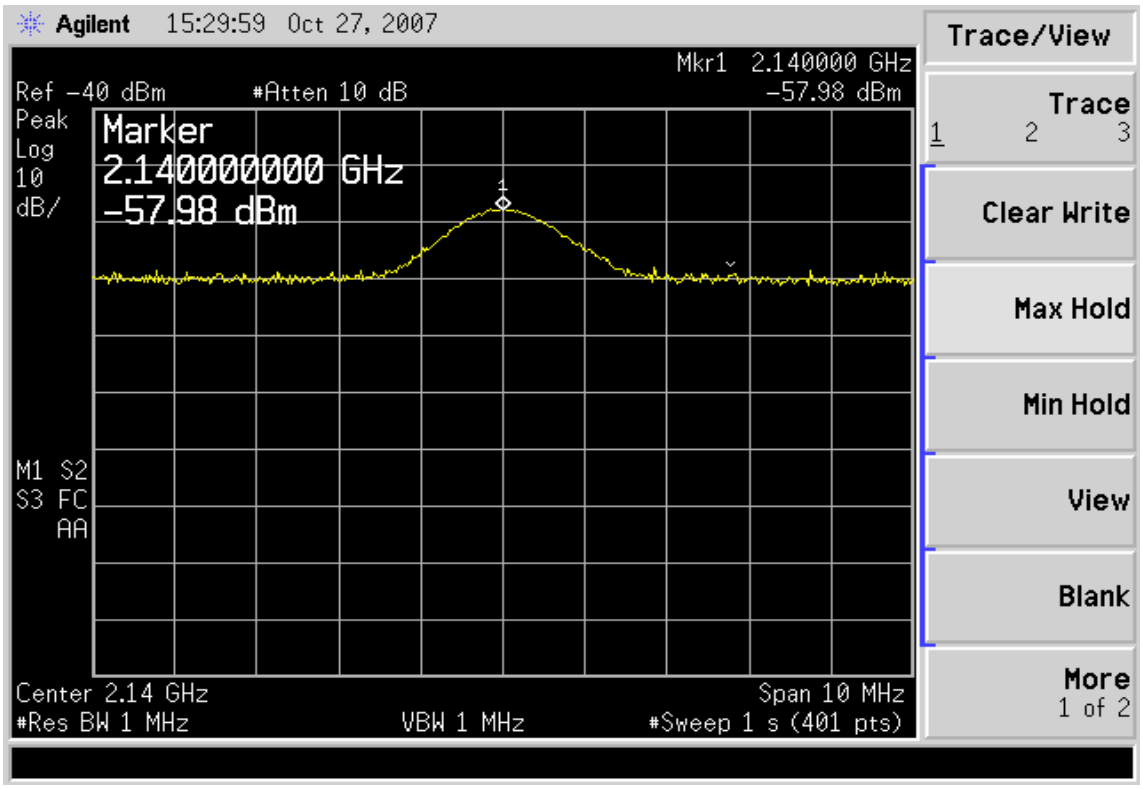
TX channel set to 10700 (RX frequency = 2140MHz), please set the Agilent 8960 to CW mode .The power: **-30 ~ -40dBm.**

Spectrum Setting: Freq=2140MHz. Caution: Must add the attenuator/DC Blocking or series connection 100PF Cap on the end of the Cable. It will avoid the direct current damage the spectrum authentically.
The Power values all are relativity not absolute.

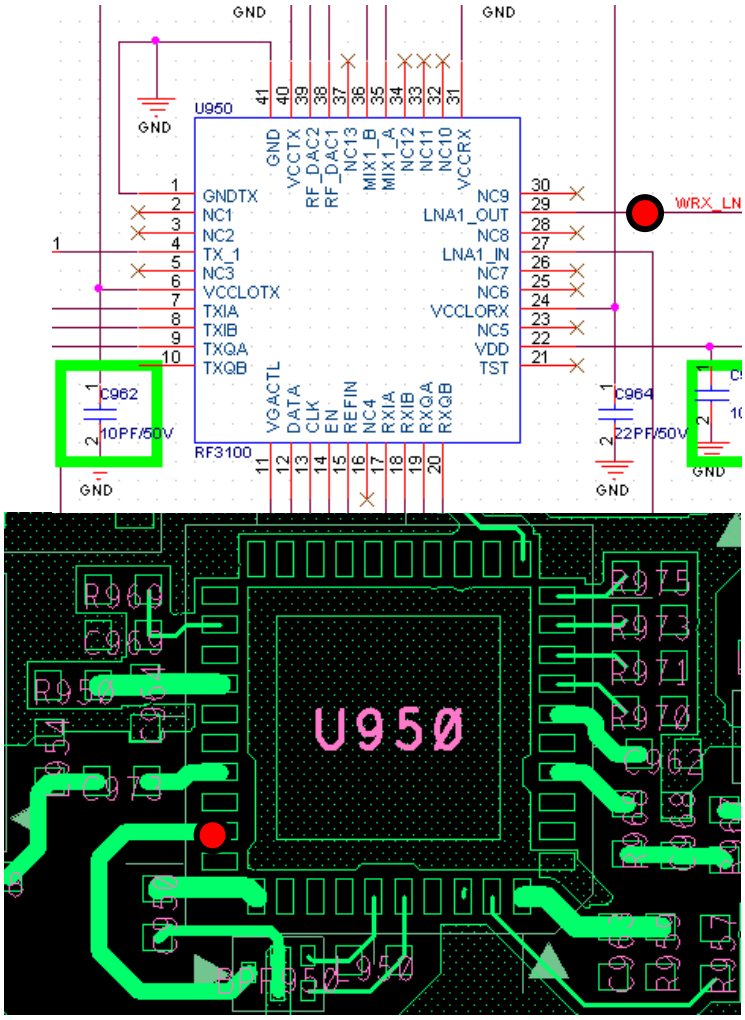


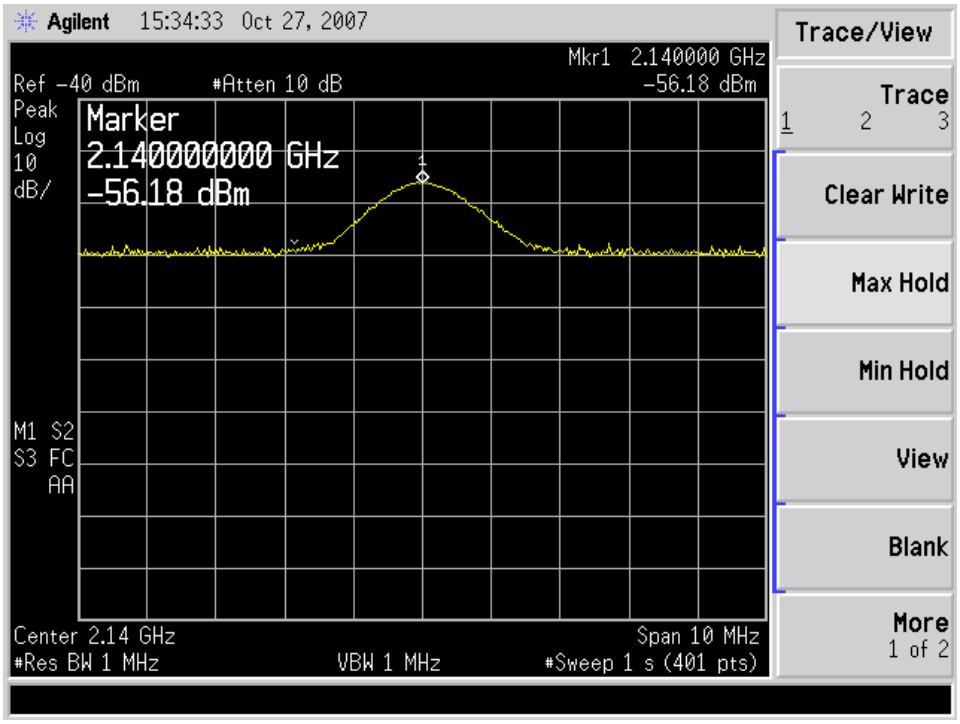


R983.2

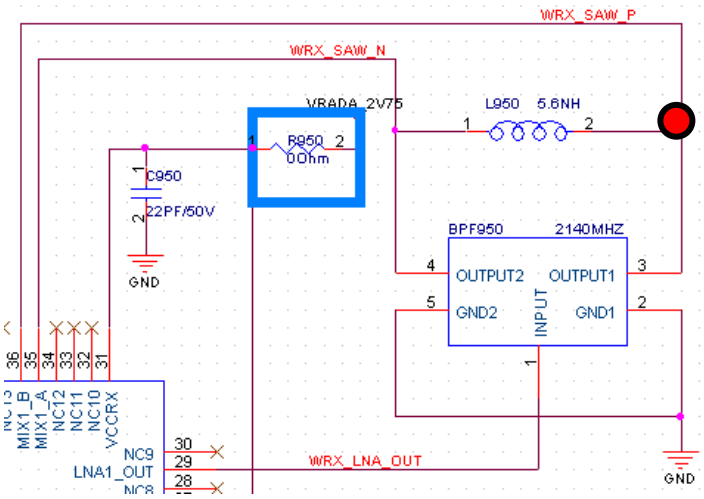


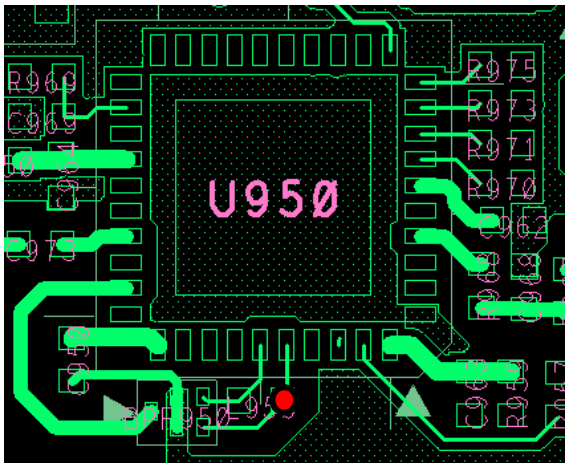
WCDMA RX Path LNA Output_U950 pin29

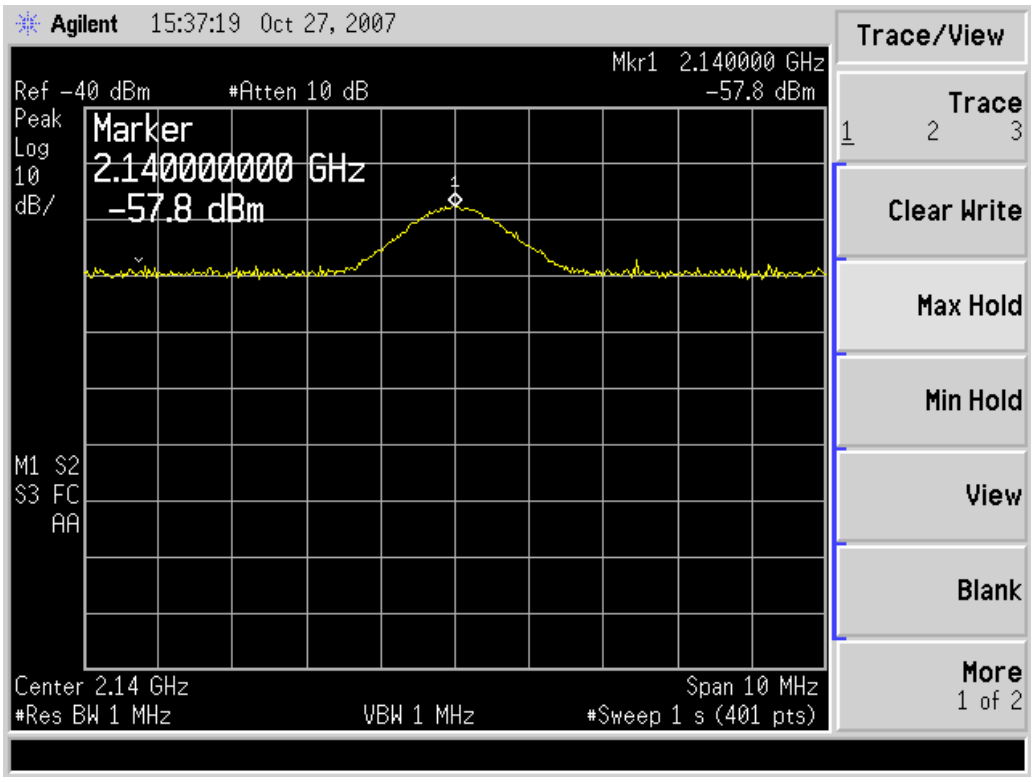




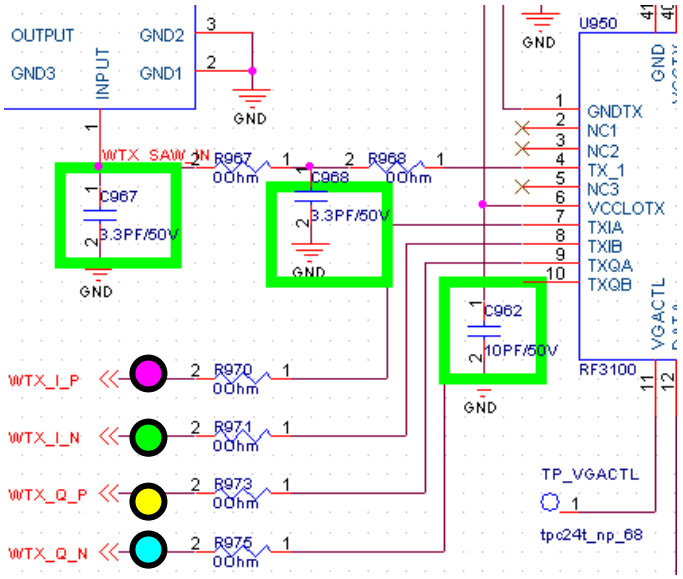
WCDMA RX Path Mixer Input_B

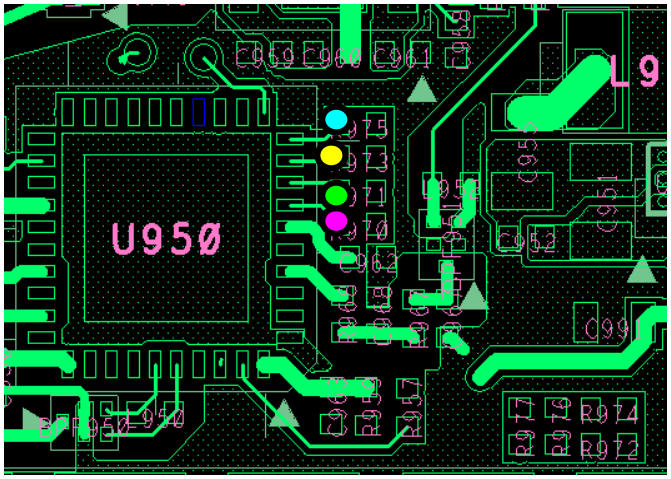


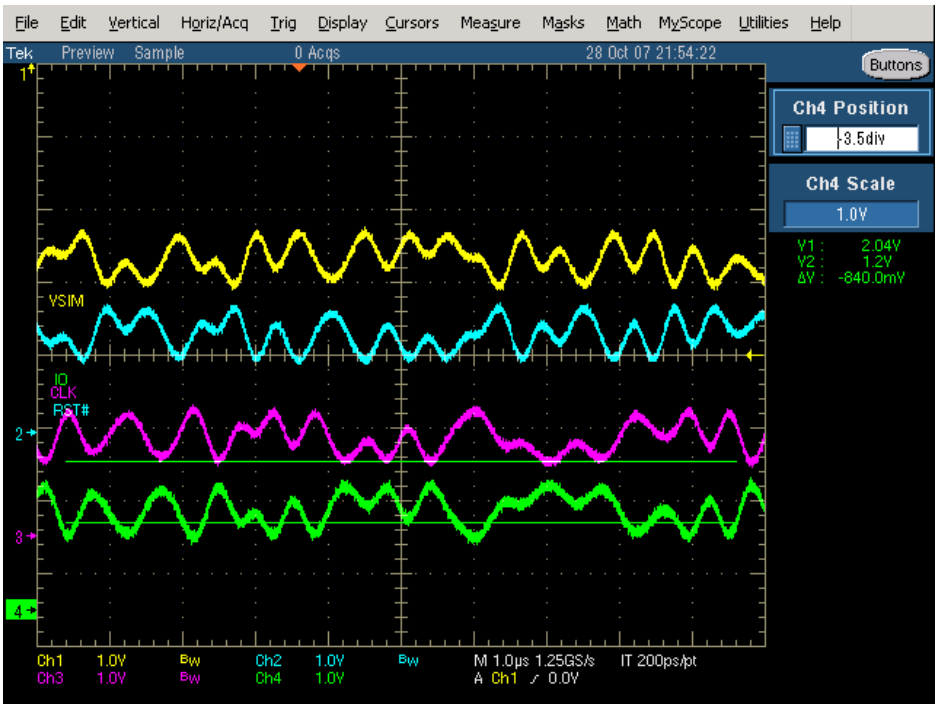


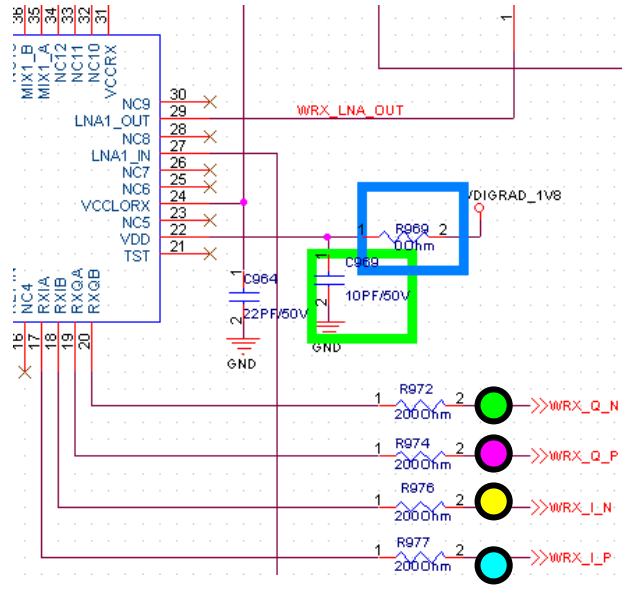


WCDMA TX Path I, Q





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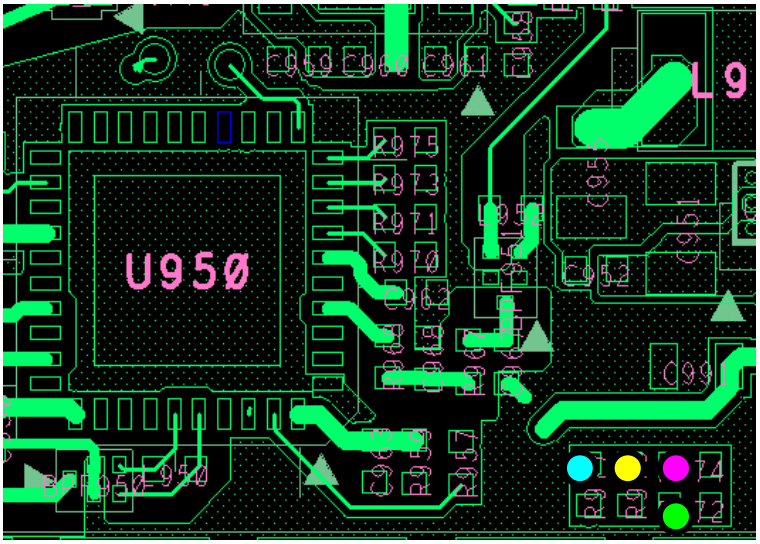
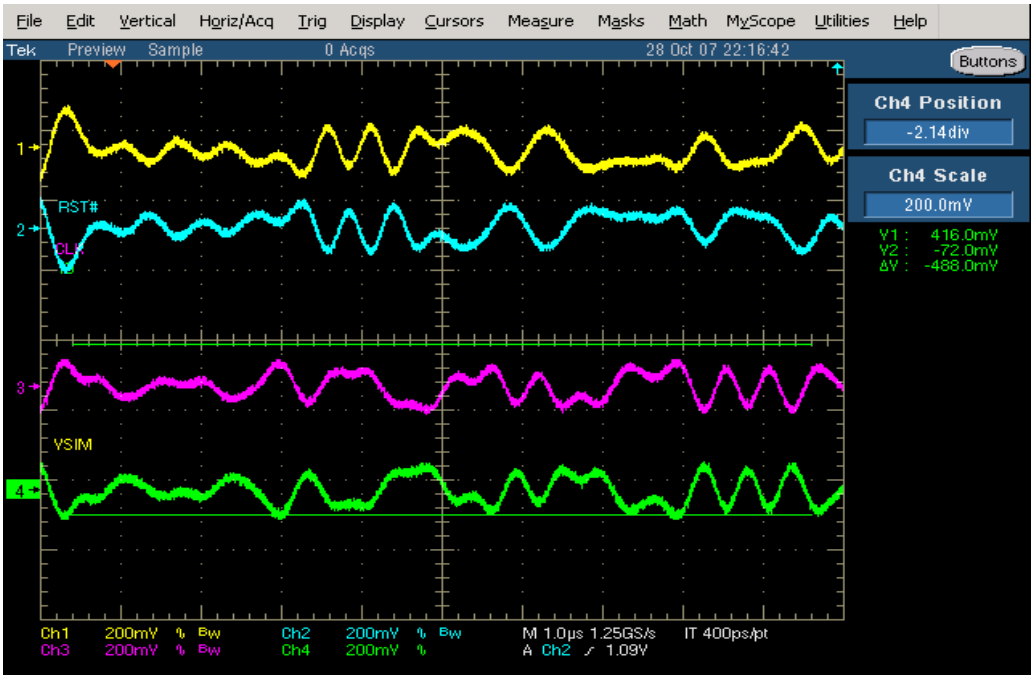
VDIGRAD_1V8
R969 0Ohm
C969
10PF/50V
C964
22PF/50V
GND
R972 200Ohm
R974 200Ohm
R976 200Ohm
R977 200Ohm
WRX_Q_N
WRX_Q_P
WRX_I_N
WRX_I_P


U950
L9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Buttons
Ch4 Position
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Ch4 Scale
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V1 : 416.0mV
V2 : -72.0mV
ΔV : -488.0mV
RST#
VSIM
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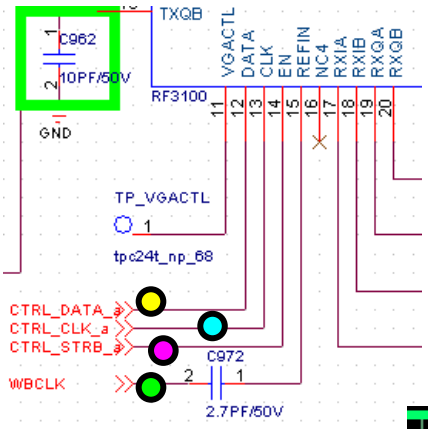
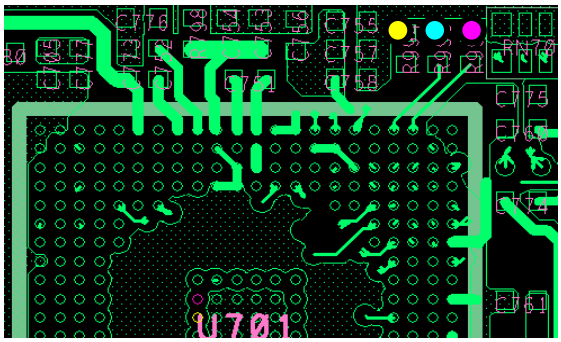
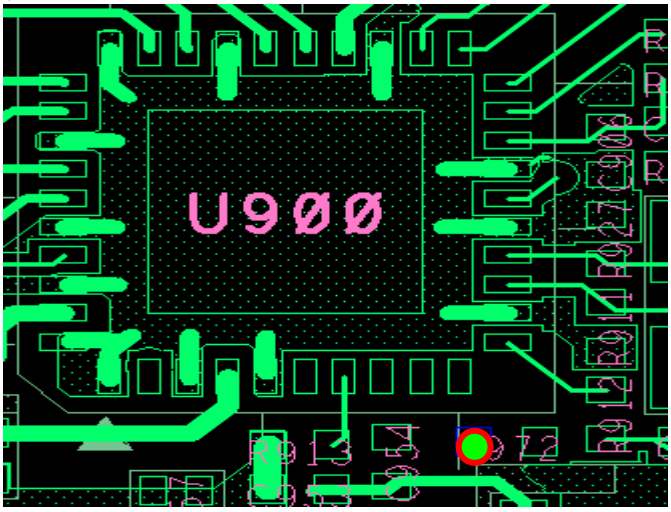
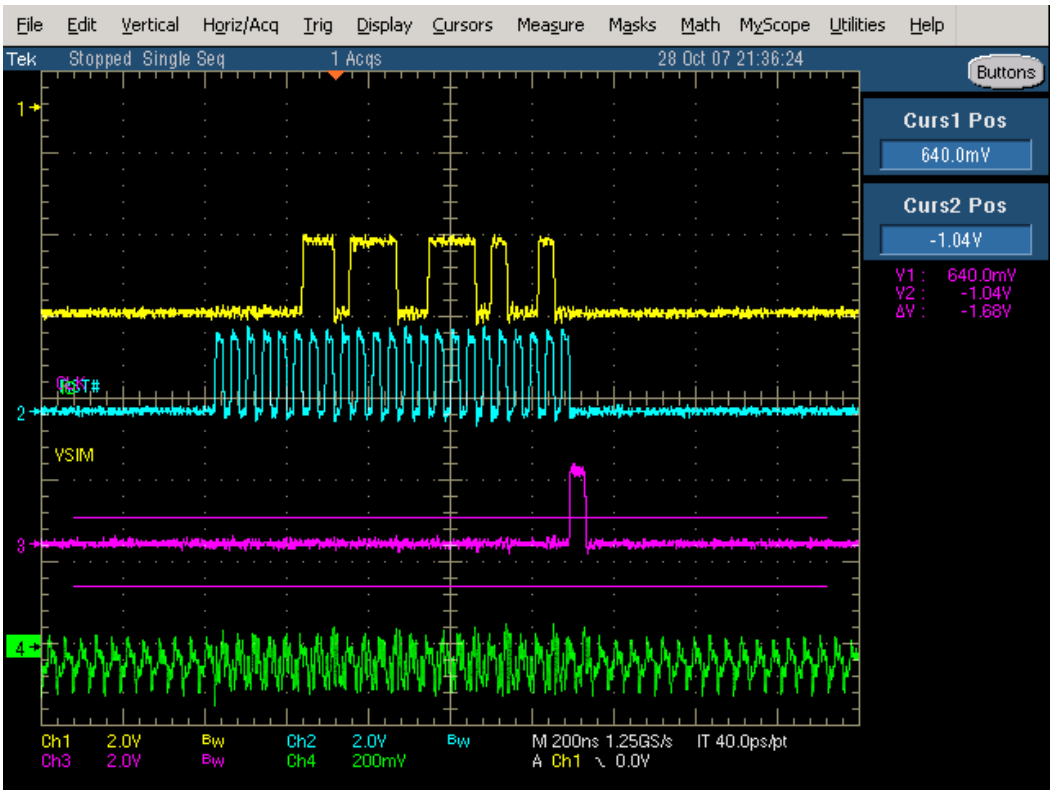
Ch3 200mV Bw Ch4 200mV A Ch2 1.09V

WCDMA RF3100 3 Wire Bus





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Buttons
Curs1 Pos
640.0mV
Curs2 Pos
-1.04V
V1 : 640.0mV
V2 : -1.04V
ΔV : -1.68V
VSIM
Ch1 2.0V Bw Ch2 2.0V Bw
Ch3 2.0V Bw Ch4 200mV
M 200ns 1.25GS/s IT 40.0ps/pt
A Ch1 ∖ 0.0V

10.8 WCDMA PA Power Control

WCDMA TX PA principle

In Transmitter mode, the signal power amplify is contain by (PA, DC/DC Converter and Transmit Power Detector). The purpose of DC/DC Converter is for power souring stability drives PA.

Total signal is amplified by PA which be weak 19dB by Coupler (U955). After is weak 15dB by attenuator, the signal output to RFIN PIN on LMV221SD (U952). When the WPOW_DET_EN = High on the DB3150, the signal will output to the D/A converter on the RF3100 via 3-wire Bus. The RF_DAC1 and RF_DAC2 used to the Power level control by (PA and DC/DC converter).